Dental Abstracts

a selection of world dental literature

AMERICAN DENTAL ASSOCIATION

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Oral surgery

Fibrous dysplasia of the maxilla with a method for preventing contractures after maxillectomy

T. Schrire. *South African M.J.* 30:1185-1187 Dec. 8, 1956

In the middle of 1948 a 13 year old girl, who had suffered from epilepsy since infancy, noticed a swelling under the left eye about the size of a marble. The swelling grew slowly and was painless; later it grew more rapidly. The patient was seen at the Groote Schuur Hospital on February 1, 1949. Surgery was recommended. By August 1949 the mass had grown to such a size that the vision from the left eye had been completely obscured. The palate was pushed down and the alveolus was covered with large veins which crossed the bony mass; at no place had the mucosa become involved.

On August 29 the tumor was removed. To fill the large space occupied by the mass, a ball of gauze about the size of a golf ball, soaked in acriflavine, was prepared and a Thiersch's graft was cut from the inside of the thigh. The skin graft was wrapped around the gauze ball with the epithelial surface inward. The distorted nasal bones, which had been pressed outwards by the tumor, were fractured, straightened and pushed back into position. A soft paraffin plug was inserted into the left nostril. The wound was sprayed with a mixture of penicillin and thrombin. After the skin-covered ball was placed in the cavity, the skin and mucosa were sutured over the ball. The face and nose were then molded to an approximately normal shape.

Recovery was uneventful. On the seventh day, under general anesthesia, the mucosa of the hard palate, which had by now practically healed, was widely excised so that a large foramen could be left leading into the skin-lined cavity. The gauze plug was removed and it was seen that the epithelium had taken over most of the raw area. Ten days later healing was complete, and a large cavity, easily accommodating the end of a thumb, occupied the position of the antrum. The cavity communicated freely with the mouth.

The pathologist reported that the tumor consisted of an ovoid encapsulated mass 12.5 by 10 by 8 cm., on the under surface of which were recognizable the left half of the maxilla and the corresponding teeth. The lines of section through the maxilla showed bone so decalcified as to be cut readily with a knife. Histologically the tumor consisted of fibrous tissue containing lamellae of osteoid tissue. The connective tissue adjacent to the plates of osteoid tissue was formed of plump spindle-shaped cells, but elsewhere such tissue was of a normal type. "Much of the bone is decalcified and between the bony lamellae is much fibrous tissue, similar to that of an osteitis fibrosa cystica in amount, but much denser, and the pic-

The condition of the patient in January 1949, August 1949 and May 1953

ture is that of fibrous dysplasia of bone. The tumor is well differentiated and slow growing; to name it is not easy, but a cancellous osteoma is suggested."

Removal of the maxilla in an adolescent must, of necessity, lead to great deformity as the years pass and the rest of the bones of the face develop. In addition, loss of the orbital plate often leads to dropping of the level of the eye, which increases the grotesque appearance. It was felt that immediate lining of the raw surfaces of the postoperative cavity with a Thiersch's graft would, by reducing contractures, help to prevent much of the deformity that would arise, and that the bulk of the graft would help to keep the eye in its normal position.

Later, it was hoped to fit a prosthesis attached to the upper denture which would maintain the contour of the face. The retarded mental condition of the patient would not allow this. Contractures were to a large extent prevented, however, presumably by the absence of raw surfaces. The large foramen made in the palatal mucosa allowed the skin-lined cavity to drain naturally into the mouth and made it practically self-cleansing.

The method adopted to prevent deformity in this patient is one that could with advantage be applied on those occasions where large maxillary tumors must be extirpated. There is almost a complete take of the graft embedded within the wound, healing is accelerated and the anticipated contractures have been gratifyingly reduced.

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Cardiac infarction in dental practice

(Der Myocardinfarkt in Zahnheilkunde)

M. J. Halhuber and H. Kirchmair. *Med.Klinik* 52:341-344 March 1, 1957

Although dentists do not often see cardiac infarction (at least not in its severe form) in their practice, a mild attack of coronary thrombosis may occur after surgical shock.

It is important for the dentist to recognize immediately the subjective and vegetative symptoms, which are as follows: (1) paroxysmal thoracic pain; (2) feeling of impending suffocation and death; (3) anoxia of the myocardium; (4) dyspnea; (5) sudden and profuse perspiration; (6) vomiting; (7) hypotension; (8) tachycardia and (9) leukocytosis.

The following procedures should be taken immediately: (1) alleviation of pain and maintenance of a quiescent state; (2) keeping the patient's head lower than his abdomen, and the feet elevated with pillows; (3) oral administration of 0.22 Gm. luminal sodium or intravenous injection of a 0.1 per cent solution of norepinephrine, and (4) removal of the patient to the nearest hospital (the patient must be kept warm during the transportation).

Dentists can make themselves helpful by following these essential principles and by immediately recognizing cardiac infarction during or after anesthesia or surgery. They can help in managing the patient in such a manner that the condition will be alleviated rather than intensified.

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Quantitative determination of the volume of blood lost during resections of the jaws

(Quantitative Bestimmung des Blutverlustes bei Kieferresektionen)

R. Stellmach. *Fortschr.Kief.Ges.Chir.* 3:116-120, 1957

At the dental clinic of the Medical Academy of Düsseldorf, Germany, the volume of blood lost during resections of the upper or lower jaw was determined in 14 patients.

The study was carried out as follows: (1) all blood lost during the operation was taken by swabs and preserved carefully in glass phials which contained previously measured quantities of distilled water; (2) the hemoglobin content of each solution was determined photometrically and (3) the blood specimens were compared with those taken prior to surgery.

An average of 1,400 ml. of blood is lost when extensive resection of the jaws is carried out. In isolated instances the volume of the blood remaining after surgery was reduced by almost 20 per cent—a reduction which can produce surgical shock.

The volume of blood lost during resection of the jaws is approximately the same as that lost

during resection of the lungs or during complicated brain surgery.

Since the introduction of electrosurgery, blood transfusions during surgery and artificially produced lowering of the blood pressure, the danger of death due to hemorrhage during resection of the jaw has almost been eliminated.

The volume of blood lost during resections of the upper jaw for elimination of malignant tumors was as follows: (1) osteoblastic sarcoma, in 3 hours 30 minutes, 1,388 cc.; (2) lamellar epithelioma (five cases) in from 1 hour 55 minutes to 3 hours 10 minutes, from 415 to 1,409 cc.; (3) spindle cell sarcoma, in 3 hours 50 minutes, 1,072 cc., and (4) cylindroma (two cases), in from 2 hours 40 minutes to 3 hours 20 minutes, from 318 to 607 cc.

The volume of blood lost during resections of the lower jaw for removal of malignant lamellar epitheliomas (five cases), in from 2 hours 45 minutes to 4 hours 10 minutes, was from 420 to 1,010 cc.

The results of this investigation were compared with similar data compiled by American oral surgeons, and it was established that the figures were almost identical.

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Aspiration before injection of dental local anesthetics

S. C. Harris. *J.Oral Surg.* 15:299-303 Oct. 1957

It is a deliberately cultivated habit of physicians and nurses to ascertain if the point of a hypodermic needle is in a blood vessel before an injection is given. There are good reasons why inadvertent intravascular injection must be prevented.

Aspiration should be practiced before injection of dental local anesthetics, for three reasons:

1. Dental local anesthetic solutions injected intravascularly are a hazard to the patient, and on rare occasions reach a lethal magnitude.

2. When the usual dental injections are practiced, the vascular bed will be entered about 32 times per 1,000 injections.

3. Unless the plunger of the injection syringe (or cartridge) is slightly but positively withdrawn, the presence of the needle in a blood vessel cannot be known reliably.

Aspiration takes a fraction of a second. This procedure affords fewer anesthetic failures, fewer anesthetic reactions, fewer frights, and an opportunity to rinse the injection needles before sterilization.

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Machines that hypnotize

Henry W. Pierce. *Science Digest* 42:1-5 July 1957

Hypnosis does not depend on external force of will, nor do hypnotists have to be swarthy, hawk-faced fellows with compelling eyes. A swinging pendulum can obtain hypnosis, at least the initial phase of hypnotic trance.

Any object which tends to hold the patient's attention for a long time can be used as a machine that hypnotizes, in place of the hypnotizer's suggestive words and piercing glance. Howard D. Tawny of the Institute of Hypnotherapy in Los Angeles invented a revolving disk which has black and white lines spiraling from the edge to the border. Staring at this disk is like gazing into a whirlpool. When the subject fixes his attention on the revolving disk, he has the feeling of being slowly drawn into it. His eyes soon close, he becomes drowsy, sleepy, sleepier, and will be soon hypnotized.

The rotating color wheel, invented by Jack Gray, is used in a similar manner. The hypnotist can deepen the initial trance by suggesting the subject go deeper and deeper asleep.

Most hypnotic machines obtain their effects through the use of either color, motion or sound. Color devices have been used effectively at the Psychiatric Clinic in Leyden, the Netherlands. Other motion than that of a swinging pendulum frequently is used to induce hypnosis. A bright metal ball, attached to a rope or chain, is dangled at the eye level of the subject. As he watches the dangling ball, he is given suggestions to sleep. Usually after a few seconds, he falls into a trance.

A sound-producing device has been invented by Lawrence S. Kubie and Sydney Mangolin,

psychologists, for inducing what they call the "hypnoidal" state. This machine hypnotizes even without a hypnotist's being present. The monotonous sounds make the subject feel relaxed and far away, a state in which he may go to sleep.

These hypnotic machines are used mainly to obtain lighter stages of hypnosis. They can be used effectively in clinics and in dental or medical offices.

New devices for inducing hypnosis are still being invented. Dentists and physicians who want to use hypnosis in their practices are looking for new technics to side-step the monotonous process of suggesting to patients to "sleep . . . sleep . . . sleep" for an hour or more. They are also searching for new ways of hypnotizing difficult subjects.

There is, for example, a machine recently developed by a clinical psychologist which produces color patterns which induce harmony and repose, much as does soft music. Music also has often been used to put the subject into a relaxed frame of mind. Machines, focusing small bright lights against black background, have been found highly effective in inducing hypnosis.

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Alveolitis and the general care required by extraction

(La alveolitis y los cuidados generales exigidos por la exodoncia)

Francisco de Paula Azzi.
Tribuna odonto.,Buenos Aires 40:314-318
Nov.-Dec. 1956

Some of the causes of alveolitis are still obscure. There are certain generally accepted principles, however, which, if adhered to, will reduce both its incidence and the severity of its major postoperative manifestations.

One of the most important safeguards against alveolitis is provided by roentgenography, which must be used whenever possible. Without preoperative roentgenograms, the extraction is necessarily performed blindly, and without those made later, the state of the alveolus remains unknown. Moreover, if a root is fractured, the extraction may be incomplete or unnecessary trauma may be caused if an attempt is made to remove the fragments without the help of roentgenograms. Another useful precaution is the removal of tartar from the affected tooth and its neighbors, because fragments of tartar falling into the alveolus during extraction may be a cause of inflammation.

If necrotizing ulcerative gingivitis or any other oral or systemic condition is present in an acute phase, the extraction must of course be postponed. Once an extraction has been started, however, it must if possible be completed. Violent attempts to remove a stubborn root should be avoided by resecting the wall if necessary, and every effort should be made to avoid contusion of the soft tissues. A bruised wound provides an excellent medium for the growth of bacteria.

Various other factors, such as the type and method of anesthesia, the use of packing, and the application of antibiotics or antiseptics, have been widely discussed. In general, however, the best guide to the prevention of postoperative alveolitis is found in a quotation from Fred Miller: "The best care of an extraction wound is no care." In short, if the extraction is well performed, if the soft tissues are not lacerated, if the bone is handled without violence, if the alveolus is not filled with antiseptics or caustics, if the breach is covered with a gingival flap, if no foreign body is left in the wound, and if foci of infection are eliminated, the best postoperative treatment is to leave the alveolus to itself, because the natural mechanism of defense and the regenerative capacity of the tissues will do the rest.

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Dry socket

Brit.M.J. No. 5040:365 Aug. 10, 1957

Q.—What is the etiology of the so-called "dry socket" after the extraction of a tooth? Is antibiotic cover recommended at the time of extraction in a patient who has had a series of dry sockets?

A.—"Dry socket" is osteitis of the alveolar process after the extraction of a tooth. During the act of extraction, repeated rocking movements may have to be performed, and these can crush the

bone and occlude its vessels. By the same action pathogenic bacteria may be distributed into the tissues of the socket from any existing infected region. The probability of the complication is increased by greater density of the bone, mechanical difficulties caused by the shape of the tooth, and the presence of acute infection.

The crushing of the bone often can be avoided by cutting away sufficient bone to permit easy delivery of the tooth, or by dividing the tooth and removing the roots separately. As to a person who has had a series of dry sockets for which no cause is apparent, the provision of antibiotic cover is recommended. It also would be reasonable to seek roentgenographic evidence of any mechanical difficulties to be anticipated and avoided, and to inquire into the possibility of constitutional reasons for the undue liability to infection.

Tavistock Square, London, W.C.1, England

Some difficulties with the simpler anaesthetics

J. Clutton-Brock. *M.Press* 238:160-163
Aug. 14, 1957

Some of the difficulties are described that may be encountered using thiopental sodium, nitrous oxide, oxygen and ether as anesthetics. Although thiopental or any other intravenous barbiturate is the simplest anesthetic to give, it is also the simplest method of killing someone. Fatalities have been caused by an overdose of thiopental sodium, even though the amount given was, in some instances, as little as 150 to 200 mg. (3 to 4 ml. of 5 per cent). If such accidents are to be avoided, ideas of what constitutes a safe dose must be revised. It would seem that not more than 50 mg. should be used as a trial dose in any bad-risk patient. It is so easy to add more and so impossible to remove what has already been given. In certain conditions the circulation time arm to head may be prolonged up to 35 to 40 seconds. In such instances the anesthetist must be prepared to wait a full minute by the clock before he decides that his initial dose has not had the desired effect, and so give more.

Porphyria is perhaps the only absolute contraindication to the use of barbiturates, but their use intravenously to produce anesthesia is exceedingly dangerous in acute septic conditions around the throat, such as Ludwig's angina and quinsy.

Doses of thiopental sodium too small to cause immediate circulatory failure may cause profound respiratory depression, and thiopental sodium should never be used unless the anesthetist feels competent to perform artificial respiration. Respiratory depression, like circulatory failure, may occur with unexpectedly small doses.

Laryngeal spasm sometimes occurs after the administration of thiopental sodium; an understanding of its causes is helpful both in prevention and treatment. The larynx is acted on by two opposing forces: (1) the laryngeal reflex which prevents the ingress of foreign material into the trachea, and (2) the respiratory center which insists that the patient must breathe if he is to live. Either of these forces may be stimulated into greater activity or may preponderate if the other is depressed. Thiopental sodium depresses the sympathetic nerves more than the parasympathetic nerves; so the laryngeal reflex, which is parasympathetic, is made more active. Furthermore, thiopental sodium is a profound respiratory depressant, so this gives a free hand to the laryngeal reflex. Lack of oxygen is a further factor that may produce or prolong laryngeal spasm.

Very small doses of thiopental sodium depress significantly neither the respiratory center nor the laryngeal reflex. Slightly larger doses depress the respiratory center but not the laryngeal reflex. Large doses depress both. Therefore, laryngeal spasm tends to occur most readily with moderate doses of thiopental sodium.

In the treatment of spasm, the cause must first be removed; it may be the presence of stomach contents or other foreign matter in the pharynx. Next, artificial respiration must be given as soon as the larynx relaxes. A small quantity of oxygen inhaled through an almost closed larynx has a remarkable effect. Relaxants will at once relieve a laryngeal spasm, but this will be dangerous if the larynx is protecting the trachea from stomach contents.

Thiopental sodium, if injected into an artery, may cause the loss of a hand or arm. Gangrene of the limb is caused by intense spasm of the arterial tree followed by thrombosis, and treatment must be instituted at once. It consists of the arterial injection of 5 ml. of 2 per cent of

lidocaine or procaine. Brachial plexus block should be performed, and unless the operation is absolutely essential, it should be postponed and the patient fully heparinized.

Gangrene of the limb appears not to have occurred when 2.5 per cent thiopental sodium has been used; this alone could seem adequate reason for the universal adoption of this concentration.

Whereas the difficulties with thiopental sodium are due to its potency, those with nitrous oxide are due to its weakness. Nitrous oxide will seldom produce surgical anesthesia without something more powerful being added to it. This addition may be any other anesthetic agent, or merely lack of oxygen. Difficulties due to anoxia may occur. Anoxia, indirectly, causes respiratory stimulation. Stimulated respirations are a prominent feature of nitrous oxide anesthesia in the dental chair. If a respiratory depressant has been given, lack of oxygen may cause rapid respiratory depression. The respirations may almost disappear with the onset of anesthesia in the dental chair if the patient has been given 50 mg. of meperidine hydrochloride beforehand for relief of toothache. This respiratory depression—in the face of anoxia —is profoundly dangerous and must be at once countered by the administration of oxygen.

The difficulties with thiopental sodium are encountered after the drug has been given, whereas troubles with ether are due almost entirely to the problem of getting the drug into the patient. Ether is the safest anesthetic known, because of two of its properties: the vapor is highly irritant and so cannot be inhaled too rapidly, and ether produces good relaxation of the abdominal muscles without depression of the respiratory center, which is, in fact, somewhat stimulated. Although these two properties of ether are the reason for its great safety, they are also the cause of some of the difficulties. The patient's respiratory center may be depressed by the preoperative medication and by the thiopental sodium, so that he will have an active larynx which will shut readily if too strong a concentration of ether vapor is presented to it. The anesthetist should guard against giving ether in too strong concentrations.

If during ether anesthesia the patient builds up within him a high concentration of carbon dioxide, when relaxation of the abdominal musculature occurs he will not be able to get rid of this carbon dioxide because, owing to the relaxation, he cannot deepen his respirations. A total flow of at least 7 to 8 liters a minute, for adults, is necessary to prevent an accumulation of carbon dioxide; a much higher flow may be necessary to get rid of carbon dioxide that has been accumulated.

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Lymph node metastases of tumors in the oral cavity and the upper respiratory tract

(Die Lymphknoten-Metastasen beim Krebs der Mundhöhle und der oberen Luftwege)

H. H. Neumann. *Deut.med.Wschr.* 82:1263-1269 Aug. 2, 1957

The lymphatic system of the neck forms a dense network which connects the various groups of lymph nodes. These lymphatic pathways are relatively well localized and easily accessible to both surgery and roentgenotherapy. Metastases in the lymphatic system usually stem from intraoral tumors or primary neoplasms of the respiratory tract.

Surgical intervention after early diagnosis is often successful. The results of roentgenotherapy, however, are less favorable and consist mainly in a temporary diminution in size of the primary tumor and its metastases.

Although the prognosis, especially in acute stages, is not always favorable, radical block dissection is the preferred treatment.

The immediate removal of the malignant tumor, its metastases and all tissues directly or indirectly affected is imperative.

Delay in determining the exact nature of swellings in the lymphatic system, frequently caused by failure to perform biopsy, permits further transfer of cancerous cells through the blood circulation to other parts of the body.

Neither the dental nor the medical practitioner is justified in making a definitive diagnosis of malignancy unless the presence of cancerous cells is confirmed by histologic examination. In all instances in which lymph node metastases of tumors in the oral cavity or the respiratory tract are suspected, a biopsy specimen should be taken,

preferably by the oncologist who will be responsible for the treatment.

When patients with suspicious swellings in the oral cavity, the upper respiratory tract or the lymphatic system of the neck consult the dentist, they should be referred immediately to a cancer clinic. In instances in which this is impossible, the dentist should be able to remove tissue specimens for examination by a pathologist. The dentist should compile a case history in which even the slightest abnormalities in breathing, hearing, speaking and swallowing are recorded as well as regions of soreness in the oral cavity.

The problem of successful treatment lies in early detection and control of the primary tumor and its regional metastatic spread. Only if this task can be accomplished (and here the dentist's contribution is almost indispensable) has the patient a chance to be cured.

Improved preoperative, operative and postoperative care have resulted in an enormously increased effectiveness of surgical intervention in instances of lymph node metastases of tumors in the oral cavity and the upper respiratory tract.

Staatliches Luitpold-Krankenhaus, Würzburg, Germany

Actinomycosis of mandible

Harvey S. Johnson, Edwin J. Pulaski and Calvin W. Thompson. *U.S.Armed Forces M.J.* 8:1214-1221 Aug. 1957

A case of infection of the mandible with *Actinomyces bovis*, with recovery after drainage, curettage and antibiotic therapy, is reported. A 22 year old soldier was admitted to the dental service of Tripler U.S. Army Hospital with cellulitis of the mandibular region of the left side of the face. Beginning two months prior to admission, he had had several episodes of swelling of the left side of the face, with mandibular trismus and severe pain. Each time the condition regressed temporarily after penicillin therapy. The patient denied that he had chewed leaves, twigs or grass. Pending bacteriologic diagnosis he was given oral hygiene and given 0.5 Gm. of erythromycin three times a day.

Physical examination was essentially negative except for a hard induration over the left mandibular region, moderate trismus exhibited in mandibular movements, and a discrete, brawny, red swelling in the submandibular region inferior to the region of the mental foramen. The third molars were impacted. The left second bicuspid had no pulp vitality. The results of routine blood studies, urinalysis, serologic examinations and roentgenogram of the chest were normal. A left lateral roentgenogram of the mandible revealed two radiolucent areas, both about 1.5 by 1.5 cm. in size, of which one was near the mental foramen and the other posterior and inferior to the second molar.

The day after admission, incision and drainage were performed under endotracheal general anesthesia through the swollen submandibular region. Ruptured, friable, grossly necrotic submandibular tissue was encountered. Swab cultures yielded alpha hemolytic streptococci and *Micrococcus pyogenes* var. *albus*. Débridement of the necrotic tissue exposed the bone lesion near the mental foramen. The tissue within the bone cavity was identified as chronic inflammatory tissue. The wound was filled with iodoform gauze and covered with a dry dressing. The nonvital left mandibular second bicuspid was removed.

The patient improved steadily in the next ten days but on the twelfth day after incision and drainage he developed an indurated, brawny, tender swelling over the region of the mandibular insertion of the masseter muscle. Trismus of the jaw was severe. Apparently pus had accumulated within the masseteric space. Aspiration with needle and syringe in the center of the induration yielded a copious amount of a purulent exudate with a lumpy, granular appearance. Microscopic study established the presence of "sulfur" granules and gram-positive actinomyces. The diagnosis of actinomycosis was established by isolating and identifying anaerobic *A. bovis*.

Antibiotic therapy was changed to procaine penicillin G (600,000 units) with aqueous solution of crystalline penicillin G (600,000 units) given intramuscularly, and 2 Gm. sulfisoxazole by mouth three times daily. Four days later, under general anesthesia, an incision about 6 cm. long was made, a fingerbreadth below the inferior border of the mandible and masseter muscle. Immediately on separation of the platysma, grossly purulent material was released. A necrotic tract

was followed to the posterior bone lesion and found to have two extensions, one burrowing superiorly beneath the masseter muscle to the sigmoid notch of the ramus, and the other extending anteriorly along the body of the left side of the mandible.

A culture of the tissue curetted from the bone lesion yielded *A. bovis*, but it was impossible to demonstrate these organisms in the tissues by histologic and staining procedures. The necrotic regions were débrided, rubber Penrose drains were inserted and the wound was covered with a dry, sterile dressing. The next day the patient's symptoms were considerably relieved.

Antibiotic sensitivity studies indicated that the actinomyces were most sensitive to tetracycline and least sensitive to penicillin, erythromycin and sulfadiazine. Tetracycline, 500 mg. by mouth four times daily, was substituted for the previous chemotherapy. The patient's recovery was uneventful.

Aspiration biopsy is invaluable in instances of any pyogenic fluctuant mass of this nature, to isolate and study the predominating organism and to guide therapy. The evolution of the lesion in this patient re-emphasizes the fact that antibiotics are not a substitute for adequate surgery and supportive treatment.

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Dental extraction in haemophilia

C. Wishart, C. Annand Smith, G. E. Honey and K. B. Taylor. *Lancet* 273:363-366 Aug. 24, 1957

A technic for the removal of teeth from hemophiliacs involves the use of transfusions of fresh plasma and well-fitting acrylic dental splints. By these means, total extractions may be done in two operations without hazard to the patient, provided certain described precautions are taken.

The patient is admitted to a medical ward for the whole of his treatment. The diagnosis of hemophilia is established by standard laboratory tests, and a general physical examination made. Roentgenograms of the teeth and jaws are made and, if necessary, the teeth are scaled. Impressions of the mouth are taken, from which transparent acrylic splints are made to be fitted accurately over the empty sockets as soon as the teeth are removed. The splints allow gentle pressure to be exerted on the gingival margin, and they prevent the clot, when formed, from being dislodged. The underlying gingiva can be seen through the transparent splint. The splints are made to be clasped to remaining teeth; in patients in whom all teeth must be extracted, four teeth (preferably bicuspids) are retained in the first operation to support the splint. On the day of operation the patient is started on a course of penicillin V 200 mg., administered orally every six hours. An hour before the operation, an intravenous infusion is set up, and the plasma from four pints of normal human blood is transfused; the rate of flow is regulated so that the transfusion ends just as the dental surgeon is removing the first tooth. Atropine 1/100 grain is given intravenously as premedication and light general anesthesia is employed.

The teeth are extracted as carefully as possible and firm pressure is applied with the fingers to coapt the socket margins. The saddles of the acrylic splints are lined with a thin layer of calcium-alginate gauze soaked in Russell's viper venom, and seated firmly. The splints are left untouched for the next seven days during which time a further transfusion of one liter of fresh or frozen plasma may be given daily or as required. At the end of this period the splints usually can be removed and the transfusions stopped without further bleeding.

In instances in which four teeth are left as abutments, usually they are removed at a second operation, similarly planned, three to five days after the first. In this event, transfusions of plasma may be required for a week after the second operation. While the splints are in position, the patient can take a soft diet, but he should be warned not to disturb the splints.

Sixteen case histories are reported. It is reasonably safe to extract teeth in the adult hemophiliac in numbers similar to those extracted in the normal patient in one operation, provided the patient is fully cooperative, and provided he does not have in his blood a circulating anticoagulant, and that concentrates of animal antihemophilic globulin are available in emergencies.

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Public health dentistry

Relation between caries incidence and nutrition in Norway

(Das Verhältnis zwischen Karies und Ernährung in Norwegen)

Guttorm Toverud. *Zschr.prophyl.Med.* 1:64-65 March 1957

The caries incidence in deciduous teeth of Norwegian preschool and school children, according to the def index, decreased during the war years and the first postwar years by almost 75 per cent; in permanent teeth, according to the DMF index, by about 50 per cent.

Since 1956, however, the caries incidence has again increased, but except in a few communities, this increase has not reached the prewar level.

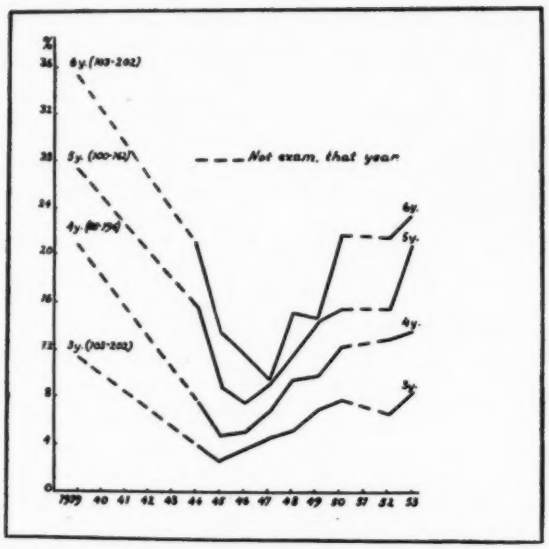
During World War II and for a period after the war, nearly all important articles of food were rationed. It was established, however, that the different rations were adequate to meet the requirements for minerals during fetal life, infancy and the preschool period. In addition to the rationed articles of food, fairly liberal amounts of fish and vegetables were available. For preschool children the requirements of protein, fat, carbohydrates and calories were met. For children between 6 and 12 years old, adequate amounts of protein and carbohydrates were present in their wartime diet, but adequate amounts of fat and calories were not obtainable. For the age group between 13 and 16 years, a sufficient amount of protein only was contained in the wartime diet. Although it can be assumed that the attainable quantities of calcuim, phosphorus, iron and vitamins A, B, C and D were almost adequate, an obvious lack of carbohydrates, fat and total calories existed in the wartime diet of this age group.

The intake of easily fermentable carbohydrates was greatly reduced. White flour was unavail-

Food rations in Norway in grams per day from 1941 to 1948

	1941	1942	1943	1944	1945	1946	1947	1948
Milk								
Preg., lact. W.	×	1000	1000	1000	1000	1000	1000	1000
0—5 years	×	750	750	750	750	750	750	750
6—15 years	×	500	500	500	500	550	500	500
Cheese	×	5	3	2	3	4	4	4
Butter, margarine	40	30	30	31	38	51	50	45
Meat	30	19	8	7	28	36	18	25
Potatoes	×	430	430	430	430	×	×	×
Flour (95% extr.)	220	220	220	200	225	250	250	250
Cod liver oil (Oct-May)								
Pregn., lact. W.	×	10		6	10	×	×	×
0—16 years (not farm chld.)	×	3		3	3	×	×	×
Sugar, Syrup	43	37	37	34	37	41	40	40
Cocoa, chocolate	← not available →				2.9	16.1	16.8	17.5
Candy	← not available →					3.1	3.5	3.8

× not rationed

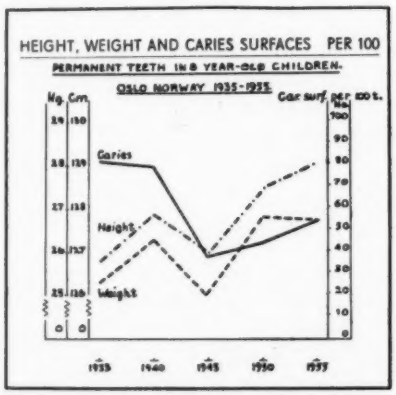


Def index in the preschool children of the Norwegian communities Blaker, Fet and Skedsmo from 1939 to 1953

able, and the quantity of sugar consumed was reduced to less than one third of the prewar level. Candies and other sugar-containing products were not manufactured. Sweets, the favored "in-between-meal" eating of the prewar Norwegian children, had to be replaced with insignificant quantities of raw vegetables, fruits and roots.

In many European countries that had been occupied by the Germans, a gradually increasing sugar consumption began in 1944, which was followed by a significantly increased caries incidence, beginning in 1946 or 1947. In Norway, the observed interval of two or more years between the increased sugar intake and the increased caries rate may be due to the strengthened resistance to caries which developed during the war years. Undoubtedly, the reduced intake of sugar, sugar-containing products and other easily fermentable carbohydrates was the main factor in the great improvement in the dental condition of Norwegian preschool and school children. The recently increased consumption of these cariogenic substances is responsible—directly or indirectly—for the increase in caries incidence now observed.

Weight, height and caries curves of the school children of Oslo from 1935 to 1955



The height and weight curves of growing children are generally accepted as being correct indicators for the adequacy of the diet and for the general health condition. This maxim, however, seems to be erroneous if the dental condition is considered. During the war years, the height and weight of children in Oslo decreased, and increased again after the end of the war. The wartime diet did not maintain the prewar standards of height and weight of children, but it reduced greatly the caries rate. The postwar diet

promoted an increased height and weight, but it produced a higher caries rate.

A diet adequate for body growth and development, therefore, can be inadequate for preservation of the teeth.

In the evaluation and recommendation of diets for children, not the height and weight curves should be considered as decisive factors, but the necessary procedures to maintain a healthy condition of the children's teeth and to prevent a further increase in the caries incidence.

State Dental School, Oslo, Norway

Natural fluoridation in Jacksonville, Florida: prevalence of dental caries, tooth mortality, and fluorosis

William P. Kroschel, Frederick E. Hasty, Jr., Floyd H. DeCamp and Wilson T. Sowder. *J. Florida M.A.* 43:895-900 March 1957

For many years the municipal water supply of Jacksonville, Fla., has contained a uniform amount of natural fluoride, about 0.70 ppm. Jacksonville (population 204,517) affords an excellent opportunity for studying the relationship between fluoride and dental health in warm coastal regions of the southeastern seaboard of the United States. The city is situated at an elevation equal to sea level, the annual mean temperature for the past 79 years has been 69.4° F., and the atmosphere is humid.

Dental observations of a study group of 1,590 white children ages 6 through 17 years, having continuous exposure since birth to Jacksonville's naturally fluoridated water, and comparison of these observations with data obtained in a similar manner from Aurora, Ill., (with naturally occurring fluoride of 1.2 ppm) suggest these conclusions:

1. Of the 1,590 Jacksonville children, 710 (44.6 per cent) had experienced no caries in permanent teeth. The DMF rates increased with age from 0.14 teeth at age 6 to 4.26 teeth at age 17. Of the study group, 1,393 children (87.6 per cent) had no missing permanent teeth as a result of dental caries. There were four children with "mild" dental fluorosis and 119 with "very mild" fluorosis (using Dean's "classification of mottled enamel diagnosis").

2. The naturally occurring fluoride content, 0.60 to 0.70 ppm, of Jacksonville's communal water supply is providing a protection against dental caries for persons with continuous use of this water during the calcification of their permanent dentitions.

3. The degree of caries reduction effected appears to be as adequate as any yet found in other communities whose public water supplies contain higher concentrations of fluorine.

4. Since no objectionable or harmful fluorosis has resulted, no need to decrease the natural fluoride content of Jacksonville's communal water is indicated.

5. On the basis of present knowledge of the effectiveness of water fluoridation, there is no reason to believe that any increase in the present fluoride content of Jacksonville's water would effect any greater protection against dental caries.

U.S. Public Health Service, 50 Seventh Street Northeast, Atlanta, Ga.

An investigation of the effectiveness of education programmes, and public attitudes relating to dental health

B. J. Kruger and G. L. Simmonds. *Australian D.J.* 2:150-154 June 1957

A questionnaire with five questions was mailed to a representative sample of the adult population of Brisbane, to obtain information on the attitude of the adult population of Brisbane to dental health. The possible answers were listed with each question.

To the question whether artificial teeth are better, just as good, or not as good as the natural teeth, 75.9 per cent to 92.3 per cent of Brisbane's adult population stated they believed that artificial teeth were not as good as natural teeth. It may be unnecessary further to prepare material educating people to the importance of saving their natural teeth. Perhaps greater emphasis can be placed on the methods of retaining natural teeth.

The second question inquired as to the most effective way of controlling tooth decay. Only

small percentages believed that "drinking plenty of milk" or "adding fluoride to the water supply" controlled tooth decay. A concerted educational program will be necessary to encourage fluoridation. Most people expressed faith in "going to the dentist every six months" and "cleaning your teeth." Only 7 per cent to 21.4 per cent voted for "reducing the amount of sugary-starchy food."

When asked what was the greatest influence on the patient's attitude toward the care of the teeth, the majority of the respondents replied, "advice by a dentist."

To the question whether a mother, as a result of pregnancy, is more likely to develop cavities in her teeth, between 63.6 per cent and 80.8 per cent of the group responding answered affirmatively.

When asked when the patient should clean his teeth, between 59.9 per cent and 76.9 per cent answered "after each meal." The next favored answer was "morning and night." A small group voted for "just before going to bed," and an even smaller percentage supported "first thing in the morning."

This questionnaire may be a useful start for studying the effectiveness of health education methods. Similar studies in other parts of the world would provide information for comparing public attitudes in different countries, and also for comparing the methods to be employed in education. Such surveys should be done at regular intervals (say, every three years) to check the efficiency of the methods used and to ascertain the need for new methods or new material.

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Fluoride intake and thyroid activity

(Fluor et thyroide)

H. Held, P. Galletti, H. Korrodi and T. Wegmann. *Med. & Hyg.,Geneva* 15:31 Jan. 20, 1957

To determine whether a relation exists between fluoride intake and thyroid activity, sodium fluoride tablets ("Zymafluor") were administered to 40 adult persons at the Dental Institute of the University of Zurich, Switzerland. Normal activity of the thyroid glands was established prior to the investigation.

The first group received tablets containing from 2 to 3 mg. fluoride daily, whereas the second group received tablets containing up to 5 mg. fluoride daily.

Some authors have assumed that fluoride intake reduces the thyroid activity and thereby decreases the susceptibility to caries. In the recently concluded experiments, however, no analogous observations were made despite the fact that the doses administered exceeded the optimal dosage recommended for caries prevention.

It may be conceded that the studies were not conclusive mainly because no children were included in the comparatively small numbers of patients examined and because of the limited observation time (it should have been six years instead of six months). Experiments of a similar nature (with children and animals) will be carried out under more favorable conditions in the near future.

In agreement with the great majority of researchers in this field, it can be concluded that no evidence is presented which proves that an antagonism exists between fluoride and iodide or between fluoride intake and the activity of the thyroid glands.

18 Passage Terraillet, Geneva, Switzerland

Early administration of various carbohydrates and subsequent dental caries in the rat

R. R. Steinman and M. I. Haley. *J.D.Res.* 36:532-535 Aug. 1957

A study was undertaken to determine the possible effects of various carbohydrates on the molars from the beginning of calcification to their eruption into the mouth.

The following solutions were administered to eight groups of young rats during the suckling period: 20 per cent sucrose, 20 per cent lactose, 20 per cent raw cornstarch suspension, 20 per cent glucose, 20 per cent equal parts of glucose and fructose, and tap water. All animals, after weaning, were placed on a high sucrose diet. All the young rats were on a normal maternal milk diet with a small amount of carbohydrate added.

The small amount of carbohydrate appeared to cause profound changes in the teeth. Six rats re-

ceiving by eye dropper a 20 per cent solution of sucrose had 32.8 carious lesions in molars, whereas nine rats receiving tap water had 12.8 carious lesions in molars.

Fourteen rats receiving 20 per cent sucrose had 52.6 carious lesions in molars; 15 rats receiving 20 per cent lactose, 34.7 carious lesions in molars; 18 rats receiving 20 per cent glucose, 36.9 per cent carious lesions in molars, and 15 rats receiving 20 per cent glucose and fructose, 41.2 per cent carious lesions in molars. Starting the administration of the carbohydrate solutions 48 hours earlier greatly increased the number of carious lesions.

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Description of the teeth and the surrounding tissues of patients at the Royal School of Dentistry, Stockholm

(Beskrivning av bettforhallandena hos klientelet vid Tandläkarhögskolan i Stockholm)

K.-E. Marken and T. Arwill.
Svensk tandlak.Tskr. 49:463-482 Sept. 1956

A clinical investigation was made of patients at the Royal School of Dentistry, Stockholm. Compared with the population of Stockholm in its entirety, the lower class is over-represented in this group of patients, and the upper class is under-represented. The middle class women are also under-represented, whereas the opposite is true with the men. The number of examined patients was 720, almost equally divided between the sexes. The age varied between 19 to 71, with men around 30 and women 29 to 40 the best represented.

The oral examination was done with explorer and mirror. The depth of periodontal pockets was measured with a graduated explorer. No roentgenograms were taken. The record cards of Marken and Arwill (1951) were used.

Few patients are referred to the school by their private dentist. The great majority come voluntarily and with the knowledge that their teeth need treatment. It is a rare patient who is not absolutely sure that something is wrong with his teeth. Almost all patients know that they will be treated by students, and that the treatment will be relatively long. An important motive is the fact that the therapy is inexpensive. The number of patients asking for crown and bridge work or removable dentures is significantly large. Here the economic gain is the greatest.

The gradual destruction of the teeth was studied by the number of intact caries-free teeth and by the number of missing teeth. The depressing fact was that already at the age of 20 the number of intact teeth was low, and it decreased with age. The number of missing teeth was high at 20 years and increased with age. In the group wearing dentures the women were significantly in the majority. As could be expected, partial dentures are found on the younger, whereas complete dentures prevail among the older patients.

Eighty per cent of the patients assert that they brush their teeth daily; however, these statements should be judged with reservation. There is a striking correlation between poor oral hygiene and materia alba. An adult patient without calculus or without signs of periodontal disease is extremely rare.

Tandläkarhögskolan, Stockholm 3, Sweden

Mortality and morbidity in the population of the fluorosis area of Sicily

(Ricerche sulla mortalità e morbilità in una popolazione affetta de fluorosi dentale andemica in Sicilia)

Omero Tempestini. *Clin.odont.,Roma* 11:189-193 June 30, 1956

The drinking water of Catenanuova, a small Sicilian village, contains 4.5 ppm fluoride, and that of the neighboring village, Centuripe, only traces of fluoride.

At the Dental Clinic of the University of Catania, Sicily, the mortality and morbidity rates in the population of both villages were recorded and the data compared.

In Catenanuova, where the fluoride content of the drinking water exceeds by about four times that of the established optimal dose, a decrease in the life expectancy was observed. The difference in the life expectancy between the population of Catenanuova and Centuripe was about three and a half years. An increase in the mortality rate in Catenanuova also was established.

The result of these examinations, however, is not final. The mechanism of the pathologic action of fluoride remains a mystery, and, therefore, the statement that the chances of aged persons living in Centuripe to reach an age of 70 are about 12 per cent higher than those living in Catenanuova needs further comparative studies.

Teeth showing blemishes or mottling were found in both villages. A study on mottled enamel, therefore, cannot be regarded as a reliable guide in evaluating pathologic changes in dental and skeletal structures, or unfavorable effects on kidney function and gastric secretion, presumably caused by consumption of drinking water rich in fluoride.

Istitutio di Clinica Odontoiatrica della Università di Catania, Sicily, Italy

Dental health program for school children of Bratislava, Czechoslovakia

(Stav výsledky planovitej starostlivisti o chrup školskej mládeže)

M. Semjan and Z. Kubániova. *Bratisl.Lekár.Listy* 37:202-209 April 1957

In Bratislava, Czechoslovakia, the lack of sufficient nutrition and of adequate dental care during the long periods of German occupation and World War II has resulted in a significant increase of dental and oral diseases. The federal and municipal health authorities have established a new dental health program which includes the creation of school dental clinics in kindergartens, public schools, high schools and colleges. The personnel of each school dental clinic consists of two dentists, one dental assistant, one dental hygienist and two nurses, all employed full time.

A house-to-house canvass was made, extending over a period of five months, to survey and record the condition of the teeth of the school children. Because of the exact sampling method used, the data obtained can be regarded as being conclusive for the dental and oral condition of the school children, prior to 1947.

The data obtained were as follows: (1) 19 per cent never had been under dental care; (2) 11 per cent had received no dental service other than tooth extraction; (3) 7 per cent had visited a dentist's office in 1946; (4) 30 per cent had been under temporary dental care within the preceding five years and (5) 33 per cent were under regular dental care.

The dental treatment performed consisted of fillings only (11.2 per cent); fillings, restorations and extractions (1.5 per cent); fillings and extractions (4.1 per cent); restorations only (1.5 per cent); periodontal disease (1.6 per cent); oral surgery (1.5 per cent); other dental care combined with tooth extraction (1.4 per cent), and extractions only (75.2 per cent).

The dental health program includes educational courses for parents, teachers and pupils on oral hygiene; assembly meetings in each school every month to discuss dental problems and to present certificates of merit to pupils who had healthy teeth at the time of the periodic examination and to those who had had their tooth defects corrected during the interval between one examination to the other.

In 1955, of the 21,131 school children examined, 41.15 per cent still had some untreated or partially treated carious lesions, but 58.85 per cent had either perfectly healthy teeth or teeth in which all defects had been treated successfully.

Stomatologickej Kliniky, Bratislava, Czechoslovakia

Fluoride osteosclerosis

Clyde A. Stevenson and A. Ralph Watson. *Am.J.Roentg.* 78:13-18 July 1957

To evaluate the systemic effects of excessive fluorides in drinking water, spinal and pelvic roentgenograms of about 170,000 patients, compiled for the 11 year period from 1943 through 1953 and on file at the Scott and White Clinic, Temple, Texas, were examined. These roentgenograms were made in patients primarily from Texas (which has over 270 communities having a water supply containing 0.7 ppm or more of fluorides) and Oklahoma (which has more than 50 such communities). Twenty-three instances of fluoride osteosclerosis were discovered.

The 23 patients manifested nothing in common except roentgenographic changes in their osseous

systems. The physicians who examined these patients were familiar with dental fluorosis but were unable to determine any relation between the roentgenographic findings and the patients' disease processes or symptoms. There was no unusual incidence of anemia, arteriosclerosis, arthritis, back stiffness, renal disease or biliary calculi.

The diagnosis of fluoride osteosclerosis in the 23 patients was based on bone changes as reported by Roholm (1937). Each of the 23 patients had lived his entire life in an area where the drinking water contained a fluoride content of from 4 ppm to 8 ppm.

The following conclusions were reached:

1. Fluoride osteosclerosis, developing in the patient exposed over a period of many years to fluorides at concentrations as high as 8 ppm, causes no harmful changes.

2. Fluoride osteosclerosis is not evidenced roentgenographically in the patient drinking water with a fluoride content of less than 4 ppm.

3. In the patient manifesting roentgenographic evidence of sclerosis of the bone, calcification of the sacrospinous and sacrotuberous ligaments is a distinct aid in the diagnosis of fluoride osteosclerosis.

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Effect of a dentifrice containing stannous fluoride on dental caries in adults. II. Results at the end of two years of unsupervised use

Joseph C. Muhler and Arthur W. Radike. *J.A.D.A.* 55:196-198 Aug. 1957

Data obtained after two years of continuous use of a dentifrice containing stannous fluoride as the active anticariogenic ingredient and calcium pyrophosphate as the abrasive indicate the possibility that through the use of this type of dentifrice a statistically significant reduction in the incidence of dental caries in adults can be obtained.

Two groups of students from the 1953 freshman class at Indiana University were provided with dentifrices which were identical except that one contained 4,000 ppm stannous fluoride. Each student reported to the clinic at 6, 12 and 24 months after his initial visit for prophylaxis and clinical and roentgenographic examination. After a two year period of participation, 247 adults whose ages ranged from 18 to 27 years were available for re-examination. The results indicate a reduction in dental caries rate of about 30 per cent. Through the use of an index of "new DMF surfaces" a statistically significant reduction of 34 per cent was found in the caries rate.

Indiana University, Bloomington, Ind.

The effectiveness of a tetradecylamine dental cream in reducing dental caries

T. G. Ludwig and W. B. Taylor. *New Zealand D.J.* 53:63-67 April 1957

A clinical trial was undertaken to test the effectiveness of a dental cream containing tetradecylamine in reducing dental caries. Two hundred boys 13 years old and 100 boys 14 years old, attending two schools, were given dental examinations and divided by random sampling into an experimental and a control group. The control group received an ordinary commercial dentifrice and the experimental group a dental cream prepared according to the formula of Irwin, Leaver and Walsh (1955) as follows: medicinal paraffin, 80 ml.; water, 30 ml.; glycerol, 4 ml.; ethanol (85 per cent), 1 ml.; oil of peppermint, 0.4 ml.; glacial acetic acid, 0.3 ml.; tetradecylamine, 1.2 Gm.; duomeen T di-oleate, 0.6 Gm.; "Nonex 63," 12 Gm., and Sucaryl, 0.37 Gm.

Both pastes were contained in plain tubes. The subjects were told the purpose of the study, but their use of the preparations was not supervised. The dental examiner was not aware of whether any particular subject had been allotted to the experimental or control group. After the study had been in progress for one year the subjects were again examined; at the completion of the study only 50 subjects remained in the experimental group and 74 in the control group.

The mean number of surfaces newly carious for the control group was 6.3 and for the experimental group, 3.5. Thus, use of the tetradecylamine dental cream resulted in a 44 per cent reduction in caries.

The use of a dental cream containing tetradecylamine gives considerable protection against caries. Some of the subjects found the taste of this dental cream unpleasant, and others objected to the absence of an abrasive and the resultant discoloration of the teeth. Attempts are presently being made to overcome these disadvantages without upsetting the caries-preventing properties of the dentifrice. If they are successful, the use of a dental cream containing tetradecylamine may be a valuable aid in the prevention of dental caries. The present study represents a preliminary investigation only, and care should be exercised in assessing the results. The experiment covered only one year, and the subjects represented a limited population group.

Medical Research Council of New Zealand, Upper Willis Street, Wellington, New Zealand

Caries experience and between-meal eating habits of preschool children

A. H. Trithart and R. L. Weiss. *J.Tennessee D.A.* 37:118-120 April 1957

In 1955 the dental staff of the West Tennessee Regional Office of the Tennessee Department of Public Health undertook a study investigating the relation of dental caries experience and between-meal eating habits of five year old children. Members of the dental staff made 1,373 dental examinations and interviewed the 1,373 children and their parents as to the different types of confections regularly eaten between meals by the children.

The various types of confections eaten between meals and the percentage of the 1,373 children consuming them were as follows: candies, 38 per cent; chewing gum, 35 per cent; carbonated drinks, 32 per cent; pastries, 30 per cent; peanut butter, 18 per cent; jelly, jam or syrup, 15 per cent; chocolate milk, 12 per cent, and frozen products, 10 per cent.

There appeared to be a direct relationship between the number of different types of confections routinely eaten between meals and the number of def teeth. Children who ate no confections between meals averaged 2.3 def teeth; those who ate from one to two confections, 4.5 def, and those who ate three or more confections daily between meals, 8.0 def.

About a third of the 1,373 preschool children consumed candy, chewing gum, soft drinks or pastries between meals almost every day.

In the spring of 1956, a similar study investigated the relation between def teeth and the actual number of times confections were eaten between meals for the day previous to a child health conference. Data for the 1956 study were collected at 36 preschool conferences in 13 counties, and included a sample of 1,124 five year old children. There appeared to be a direct and consistent relation between the number of def teeth and the number of times confections were eaten between meals on the day previous to the preschool conference. An almost consistent progression of one additional def tooth for each additional between-meal confection was noted.

Madison County Health Department, Jackson, Tenn.

A comparison of pH values of in vivo dental plaque after sucrose and sorbitol mouth rinses

Leonard S. Fosdick, Harold R. Englander, Kirk C. Hoerman and Robert G. Kesel. *J.A.D.A.* 55:191-195 Aug. 1957

Many investigators assert that dental caries is initiated and continued by the production of acid in the dentobacterial plaque during a short period after the ingestion of fermentable carbohydrates. If a nonfermentable sweet substance could be substituted for sucrose or other fermentable carbohydrates, significant reductions in the incidence of dental caries might be attained. Such a possibility exists with the substitution of the hexahydroxy alcohol, sorbitol, for sucrose and dextrose in various confections.

Plaque pH determinations were made in the mouths of caries-active naval recruits (average age 18 years) after sucrose and sorbitol mouth rinses. The average minimum pH (all quadrants combined) during the 20 minute interval after a one minute 50 per cent sucrose mouth rinse was pH 5.38. After sorbitol it was 6.55.

All the subjects produced an acid potential of at least pH 5.6 at some time during the 20 min-

ute interval after the sucrose rinse. None of these produced pH values below 6.0 at any time after sorbitol mouth rinses.

For each quadrant, the average pH value during the 20 minute period after a one minute 50 per cent sorbitol mouth rinse was 6.9. The average pH value for each quadrant during the 20 minute period after a sucrose rinse dropped precipitously.

Although cyclamate and saccharin are effective sweetening agents and can be used as sugar substitutes, they are not foods and they have no nutritional value. In the rat, however, sorbitol approaches glucose in caloric value. Although sorbitol cannot replace sugar completely in the normal diet, it may be used effectively in confections in limited amounts in certain persons with rampant caries.

Northwestern University School of Dentistry, Chicago, Ill.

A study of the aetiology of labial caries of the deciduous incisor teeth in small children

P. M. C. James, G. J. Parfitt and Frank Falkner. *Brit.D.J.* 103:37-40 July 16, 1957

Caries occurring on the labial surfaces of the deciduous incisor teeth in small children is not uncommon, and may appear as early as nine months. The lesions usually start on the labial surface of the tooth near the gingival margin, and spread incisally. Rapid progression of the disease is associated with light yellowish coloration of the lesions, softening of the dentin and early crown fracture. If the carious process is slow, the dentin is harder and dark brown in color, and in these instances spontaneous arrest sometimes occurs.

Pitts (1927) found no correlation between the incidence of such labial caries and breast feeding or bottle feeding, but observed that 59 per cent of the patients in the group had been given a "dummy" dipped in sugar, honey, milk or proprietary sweetened malt and cod-liver oil extracts, for long periods of time, usually as an inducement to sleep; he concluded that the administration of such "dipped" dummies was the most important etiologic factor.

Fifty-eight children with labial caries of the deciduous incisors, attending or referred to the Eastman Dental Hospital, University of London, were studied. They were between 8 and 47 months old; 30 were boys and 28 girls. Twenty-six of the children had extensive caries in other teeth, 28 had moderate caries in other teeth, and 4 had no other carious teeth.

Forty-three of the children (74 per cent) had regularly received a sweetened comforter, either in the form of a dummy dipped in a sugary substance or a "comforter" bottle which the child had available more or less continuously. Of the 15 other children, 12 had been given medicines or concentrates several times daily for long periods; 6 of these had undiluted fruit juice or fruit syrup concentrates, 5 had iron tonics and 1 had cherry linctus.

A group of 187 unselected children within the same age range was used as a control group. At the initial examination of the control group, no instance of labial caries was observed. One year later, seven children were found to have labial caries; all seven had been given sugared comforters. Of the other eight children that also had comforters, seven had no labial caries and one had left the district.

The observations support those of Pitts.

The occurrence of early labial caries of the deciduous incisors is strongly associated with local factors involving the retention of sweet, sticky and acid substances on the labial enamel surfaces. The most important vehicles were sweetened comforters. No connection was found between the occurrence of labial caries and the incidence of bottle feeding, the illness of the mother during pregnancy, the vitamin supplements taken by the mother during pregnancy or the illness of the child during the first year of life.

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Operative dentistry

The amalgam matrix

Richard S. Youngs. *J.Michigan D.A.* 39:173-179 June 1957

The amalgam matrix, mainstay of the amalgam restoration, is too little considered by the average dentist. The selection and the proper use of an amalgam matrix are essential in restoring a tooth to its original contour or in improving that contour.

A proper technic for applying a mechanical matrix retainer consists of the following steps: the matrix band is contoured if necessary; the band is tightened; the gingival margin is wedged; the retaining band is slightly loosened; the contact area is burnished and the retainer is rechecked for margins, contour and contact.

Important in the choice of a matrix retainer and in wedging is a re-examination of the cavity preparation for buccal, lingual and gingival extensions after the rubber dam or cotton rolls are in place.

The gingival floor of the cavity must be checked after placing the matrix band and again after wedging. If a tooth has a concavity in the gingival third of the proximal wall after wedging, it will still have an open area at the middle third of the matrix at the gingival floor. This may possibly be eliminated by changing the cavity preparation; that is, by carrying the gingival floor deeper, depending on the shape of the tooth. If this open area cannot be eliminated by wedging, the operator should plan to remove any excess immediately after the matrix is removed.

The matrix can be adapted most satisfactorily to the gingival cavity wall by using a wedge or a wedge in combination with a ligature. A common error is to wedge too high. This results in a notch or concavity in the proximal wall of the amalgam restoration.

The contact area can be established by contouring the matrix band and burnishing the band after the retainer is placed. A round burnisher must be used with heavy pressure against the matrix metal to establish the proper contact. Too small a burnisher tends to create an uneven contact area. The contact area cannot be established correctly if the band is pulled too tightly.

If proper contours and contacts are established, the function of the tooth will be restored satisfactorily and periodontal disturbances caused by poorly contoured amalgam restorations will be eliminated.

A proper matrix (1) is easily contoured, (2) allows heavy packing pressures without movement during condensation, (3) supplies the equivalent of the missing wall or walls, (4) prevents amalgam excess from packing beyond the margins and (5) allows restoration of the contact area without disturbing it in removal of the matrix.

310 East Maumee Street, Adrian, Mich.

Increasing dental speeds

Frank J. Brauer. *U.S.Armed Forces M.J.* 8:1291-1302 Sept. 1957

Dental handpiece speeds have increased rapidly in the past ten years, and speeds ranging from 200,000 to 300,000 rpm are not uncommon. Innovations producing these high speeds include the water turbine, the air turbine, and increased ratios of gears, belts and pulleys. The main obstacle to increasing handpiece speeds is friction.

The vibration produced by rotating dental instruments is annoying and distressing to the patient. Maximum unpleasantness occurs in the range of from 100 to 200 cycles per second. True-running burs and diamond instruments operated at high speeds produce vibration well above the unpleasant frequency range.

Increased temperatures are produced by increases in either handpiece pressure or rotational speed. To dissipate the heat produced by increased speed, a coolant must be employed; the water spray is the most effective.

The efficiency of carbide burs and diamond instruments increases with an increase in rim (peripheral) speed.

The advantages of increased dental speed include the following: less pressure required; less

fatigue produced; more control by the operator; less vibration felt by the patient; increased efficiency of burs and diamonds, and chair time decreased. Disadvantages consist of the special practice and trained tactile sense required; the necessity of using coolants; the need for more exacting care and maintenance of equipment, or for purchasing new, expensive equipment; the unpleasant noise level; the greater wear on ball bearings, clutch, and bur seat; the greater possibility of pulp damage, and the necessity for efficient aspiration.

Extensive laboratory and clinical studies are required to determine optimum speeds of rotation, the effective efficiency ranges of carbide burs and diamond instruments, and the solution to other problems associated with high speed.

Naval Station, Navy No. 127, % Postmaster, Seattle, Wash.

Cold-polymerizing resins as restorative materials: a clinical evaluation

Björn Hedegård. *Odont.Tskr.* 65:169-212 June 1957

A clinical evaluation was made of a self-curing acrylic resin (Sevriton) used as a restorative material on root-filled or pulpotomized teeth. In all, 412 crown restorations in 369 patients were examined. The following criteria were employed: occlusion, articulation, marginal fit, marginal discoloration, secondary caries and caries of the dentin. A special classification system for each factor was worked out.

The self-curing acrylic restorations were divided into six different types depending on their situation, size and method of retention.

The results of the investigation are summarized as follows:

1. The marginal fit was clinically unacceptable in 50 per cent of the acrylic restorations and approximately 20 per cent of the 36 alloy crowns.

2. Marginal discoloration was pronounced in 40 per cent of the restorations.

3. The incidence of secondary caries in the acrylic-crowned teeth was about 15 per cent, and was nil in the 36 teeth restored with alloy crowns.

4. There was caries in the dentin under about 60 per cent of the acrylic resin restorations and under none of the alloy crowns.

5. There was a strongly significant correlation between poor margins in the acrylic restorations and occurrence of caries in the dentin.

6. Likewise there was a strongly significant correlation between the incidence of dentinal caries and the type of acrylic restoration in that the larger restorations had a significantly higher frequency of dentinal caries.

7. The articulation and the occlusion have relatively small influence on the frequency of dentinal caries in comparison with the two factors mentioned.

8. Although a complete comparison cannot be made between the alloy and the self-curing acrylic restorations, it is justifiable to conclude that the acrylic restorations undoubtedly are much inferior.

The conclusion is that the self-curing acrylic resins cannot be considered as acceptable materials for restorative purposes.

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An amalgam technic: technical suggestions to complement basic principles

George A. Brass. *Illinois D.J.* 26:593-600 Sept. 1957

Fine results with amalgam cannot be obtained in the presence of moisture. The rubber dam provides the only means of maintaining a consistently dry field. After the interproximal contacts are checked, the rubber dam should be placed as follows:

1. A layout should be at hand and ready.

2. The dam is anchored on the most posterior tooth first, and then is worked forward from contact to contact in sequence.

3. The assistant holds the lower corners when working on an upper tooth, the upper corners when working on a lower tooth.

A cavity preparation for amalgam must satisfy the four requirements postulated by Black. It must be through the enamel, it must be undercut, it must have an ample seating area on sound dentin, and it must have retention in sound dentin.

The multitude of types and forms of matrixes and matrix retainers is evidence that a satisfactory matrix has not yet been obtained.

One of the amalgams accepted by the American Dental Association should be used, and the proportions set out in the accompanying instructions should be used. It is good practice to proportion the alloy and the mercury accurately and to put it up in capsules. With the amalgam thus proportioned and ready at hand, it should be mixed well and with uniform consistency, so that the dentist will be handling an identical mix on every occasion.

Amalgamation is best accomplished by using a uniform quantity of 600 mg. of alloy proportioned with 840 mg. of mercury and mixing it for nine seconds in a mechanical amalgamator with pestle, followed by three seconds without the pestle. One such mix should fill adequately a Class I cavity.

When the amalgam has been mixed by a mechanical mixer, it is unnecessary and unwise to mull the material further; mixing without the pestle serves this purpose. The amalgam is then transferred to the tray and divided into portions to be wrung out by the assistant as it is used. The number and size of these portions depend largely on the speed with which the operator condenses them into his preparation. Sweeney suggests that best results can be obtained by kneading the amalgam five times while still in the squeeze cloth after the excess mercury has been removed. This advice is extended to those using hand condensation and not to those using the pneumatic condenser. A common error is to attempt to force into the cavity proportions of amalgam that are much too large. Because of the rapid loss of plasticity in the material, it is advisable to use smaller but more frequent mixes.

Hand condensers of the proper design are the instruments of choice. Hand instruments should be: (1) shaped so that they can fit into the detail of the cavity and into the angles made by the cavity walls and the matrix; (2) small faced so that the maximum force can be exerted on the material, and (3) well designed so that the instruments will not tend to twist in the fingers while pressure is being exerted.

The amalgam is built up from the greatest depth of the preparation to the overfilled cavity with portions of material which have undergone uniform manipulation. Excess mercury worked to the surface is discarded after each condensing effort.

Overfilling is important; it draws excess mercury to that portion of the material which is outside the cavity walls. The removal and discarding of this excess assures that the margins will be free of a surplus of mercury and that margins of maximum crushing strength will be maintained. It is here that the use of the mechanical condenser is recommended, supplemented with a small piece of unvulcanized rubber with which the last of the excess mercury can be drawn to the surface without jeopardizing the enamel margins of the prepared cavity.

The overfill of amalgam should be built to an excess of at least a full millimeter in depth. If properly executed with a quick-setting alloy, it should be ready to carve when condensation is completed; a waiting period of up to three minutes may be necessary if a slower setting alloy is used. Carving should not be begun until resistance to the carving instruments is evident. The angles in the carving should be not less than right angles.

A no. 5 or shepherd's crook explorer, sharpened with rotating stones to form a fine sickle, can be used to check the gingival margins and to remove excesses. If space is available, fine abrasive strips or even contouring knives can be employed to insure the removal of any gingival excess. A piece of ligature is passed through the contact area. The occlusion is next checked for high spots, and the patient dismissed and cautioned not to masticate on the new filling until the next day.

Amalgams are best polished a few days after condensation when there is less possibility of disturbance. Frictional heat must be avoided in polishing. In polishing, the proximal surfaces are disked and the occlusal surface is gone over with the appropriate round burs followed by sulci disks. Moist pumice is applied to the accessible portions with a pointed brush, then with a soft rubber cup. The operation is repeated with the polishing agent moistened with alcohol.

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Prosthetic dentistry

Masculine and feminine characteristics in human upper anterior teeth

(Gibt es maskuline und feminine Formenmerkmale der oberen menschlichen Vorderzähne?)

Gerhard Tanzer. *Deut.Stomat.* 6:457-475 Aug. 1956

The art and practice of dentistry and medicine are directed toward correcting the failures or distortions of the original design. Before such corrections are attempted, especially by prosthetic restoration, the normal architecture of the structure should be studied, and the example set originally be adopted as closely as possible.

The dentition of modern man, except for more or less insignificant alterations, is almost invariable. Deflection from the norm exists, especially in form and size of teeth. Most of these variations, however, can be differentiated by their sex characteristics, especially if they occur in the upper anterior teeth.

If it can be agreed that specific feminine and masculine molds exist in the formation of human teeth, this difference is observed best in the upper anterior teeth.

Dental prosthetics has become an art that goes beyond the science of designing and constructing bridges, crowns and partial or complete dentures. As a health service, dental prosthetics is equal in importance to any other specialty of dentistry or medicine. Its success is based on the prosthodontist's knowledge of the biologic, mechanical and esthetic principles involved.

An artificial tooth, feminine in form and size, inserted in a masculine mouth, is just as out of place as a young tooth in an old mouth, or a shining white tooth in a yellow or brown tooth row.

To evaluate the esthetic values of complete upper dentures which had been designed and constructed with specific consideration being given to sex characteristics in the anterior teeth, a group was invited to judge whether esthetic requirements were met. This group consisted of 100 persons, among them dentists, dental technicians, artists, physicians, representatives of the dental trade industry, engineers and housewives. There was no significant difference in judgment between dentists and nondentists.

Later, 48 enlargements of tooth photographs were exhibited to establish whether masculine and feminine characteristics could be recognized

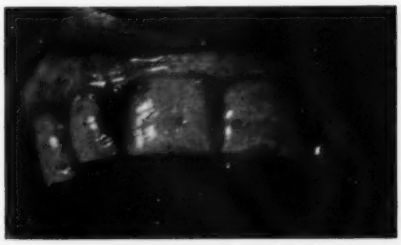

Figure 1 Feminine tooth characteristics in a male patient

Figure 2 Masculine tooth characteristics in a male patient

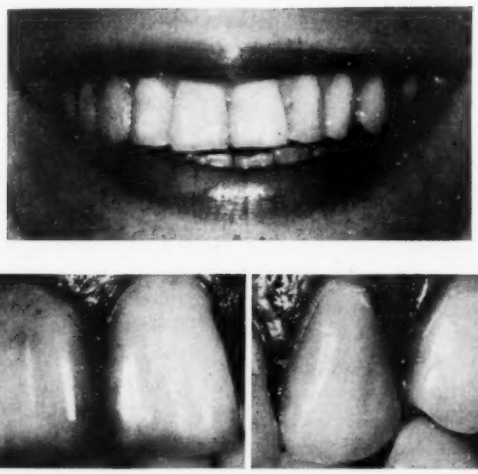

Figure 3 Masculine tooth characteristics in a female patient. Above: Mouth after insertion of a complete upper denture. Below left: Upper central incisors. Below right: Upper lateral incisor and cuspid

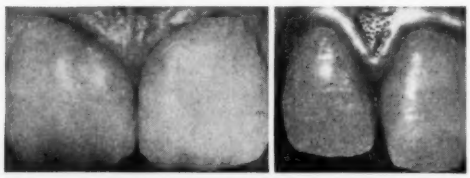

Figure 4 Feminine tooth characteristics in a female patient. Left: Upper central incisors. Right: Lateral and central incisors

by the group. In more than 60 per cent of the photographs, the correct sex was recognized.

These tests established the fact that the prosthodontist must be able to differentiate between the sex characteristics of the teeth, which in many instances are not identical with the patient's sex. He also has to consider the patient's personality and mouth condition. Laboratory procedures in denture construction then have to follow accurately the dentist's artistic directions.

Patients are entitled to expect harmony between facial appearance and the dental restoration.

Further studies and experiments will make this essential harmony a matter of course in designing and constructing complete dentures. Recognition and consideration of the differences existing between masculine and feminine characteristics in the upper anterior teeth will be one important step to obtain this desirable harmony.

It is also important that the manufacturers of artificial teeth should recognize the significance of the difference between masculine and feminine characteristics in human upper anterior teeth.

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An emergency temporary denture

David Disick. *J.Pros.Den.* 7:590-594 Sept. 1957

A technic is described for constructing an emergency temporary denture when a complete upper denture has been lost or damaged beyond repair. The temporary denture is meant to serve the patient only until a more permanent type of denture can be constructed.

An alginate impression of the edentulous ridge and the surrounding region is taken. A cast is poured, using a mixture of one-half cast plaster and one-half impression plaster to achieve a short setting time. After the mixture has set, it is separated from the impression, and an outline of the border of the denture is marked on the plaster cast with a soft pencil. The palatal seal area is scraped lightly with a sharp laboratory knife. A coat of liquid tin-foil substitute or petroleum jelly is applied to the cast.

Self-curing pink acrylic powder is applied to the cast, a small section at a time, by spraying the dry acrylic powder from a polyethylene bottle. The acrylic monomer is then applied with a dropper until the powder is saturated. This process is repeated over the entire area of the cast outlined in pencil until it is completely covered. The acrylic resin is then built up as before, layer on layer, until an adequate thickness is developed. The resin is allowed to cure for about 10 to 15 minutes or until it is hard. The denture base is separated from the cast by inserting a knife between the acrylic base and the cast. The base is trimmed to the penciled finishing line which has been transferred from the cast to the tissue surface of the denture base. The palatal surface can be polished at this time. The base is tried in the mouth and the final trimming is accomplished.

A normal occlusal vertical dimension can be established in the same manner as for a permanent type of denture.

A sufficient amount of self-curing, tooth-colored acrylic resin of a suitable shade is mixed and allowed to cure to a doughy consistency. The ridge surfaces of the denture base, distal to the cuspids on both sides, is then moistened with acrylic liquid, and the partially set tooth-colored acrylic resin is placed on the denture base in those areas. The lower teeth are lubricated, the upper denture base with the acrylic resin attached is placed in the mouth, and the patient is instructed to close slowly to the previously determined vertical dimension as recorded on the caliper or Boley gauge. The denture base is removed from the mouth after one minute, and the resin is allowed to set. This produces the desired occlusal height and interdigitation in the posterior segments. The excess tooth-colored acrylic resin is removed, and the base is replaced in the mouth and the vertical dimension rechecked.

The denture base is replaced in the mouth and the six anterior teeth are selected to match the patient's lower teeth. If stock teeth are not available, tooth-colored acrylic resin can be added and carved later, or celluloid crown forms can be filled with acrylic resin to form the teeth. The teeth are ground in where necessary, set on the denture base while it is in the mouth, and occluded with the lower teeth, then fixed to the base by means of sticky wax placed on the labial surface. The denture is removed and pink self-curing acrylic resin is applied to the lingual surface of the base and teeth by the paint-on method. This attaches the teeth to the denture base. After the new resin on the lingual surface has set completely, the sticky wax is removed from the labial surface, and the paint-on technic is used to attach the teeth to the labial surface of the denture. After sufficient time is allowed for the resin to cure, the denture and teeth are trimmed, shaped and the posterior segments are carved to simulate teeth. The denture is polished for insertion in the mouth. Final adjustments of the occlusion, borders, postpalatal seal and incisor tooth length are made at this time, and the denture is complete.

The procedure can be modified to make temporary partial dentures, lower dentures, immediate dentures and bite planes.

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Roentgenology

Intensification of intraoral roentgenograms by toning

Jack Budowsky, Austin H. Kutscher, Evald Linder, Edward V. Zegarelli, John D. Piro and Robin Rankow. *Oral Surg., Oral Med. & Oral Path.* 10:839-846 Aug. 1957

A study was undertaken to evaluate the effectiveness of a toning solution for the intensification of roentgenograms. Details of the toning solution have been described by Blake, Roderick and Umberger.

Three roentgenograms in duplicate were taken for each of 20 regions of the mouth (in 20 patients). One anatomic region was chosen in each patient, and three exposures, as identical as possible for each region, were made. Each film was individually processed during developing, fixing and intensification.

In the first ten patients, one film (in duplicate) of each set of three was normally processed; one film (in duplicate) was underdeveloped by a factor of one half, and one film (in duplicate) was underexposed by a factor of one half. One film of each of these duplicate film packets was then intensified for a period of 8 or 11 minutes. The remaining duplicate film of each packet, which had been similarly developed and fixed, was maintained intact as a control.

In the last ten patients, one film (in duplicate) of each set was exposed and processed normally; one film (in duplicate) was exposed for only one-fourth the suggested exposure time for the region, and one film (in duplicate) was exposed the normal time but was developed for only one-fourth the suggested development time. One film of each of these duplicate film packets also was intensified for 8 or 11 minutes.

Each intensified film could be compared with an identically exposed and developed but unintensified control film. Each pair of these films was mounted and rated comparatively (intensified versus unintensified) by seven members of the department of stomatology and one member of the department of surgery of the Presbyterian Hospital as to visibility of detail, over-all clarity and variations in density.

Nearly all the investigators agreed that the intensification process brought out bone trabeculation, root formations, the lamina dura, and so forth, in more vivid detail than did the unintensified control films. It was deemed worthy of further investigation to assay the use of intensification procedures using deliberately underexposed or underdeveloped films as an improved diagnostic procedure for certain lesions of the hard structures. Such a study is now in progress.

Under various conditions in which it may be impossible to obtain other than an underdeveloped or underexposed roentgenogram, the subsequent use of a toner intensifier is indicated to improve the quality of the films. In many instances, the image produced will be superior to that in the unintensified state. The intensification process, an inexpensive, readily available, simple procedure, is carried out in room light; hence the roentgenogram may be toned exactly to the desired density and contrast. The technic also may prove to be of value in restoring roentgenograms faded by age.

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Responsibility of the medical and dental corps in the utilization of roentgen rays and other ionized irradiations

(La responsabilité du corps médical dans l'employ des rayons X et autres rayonnements ionisants)

Scientific Committee on the Effects of Atomic Radiation of the United Nations. *Rev.mens.suisse odont.* 67:249-255 March 1957

The United Nations General Assembly, recognizing the problems in public health that are created by the development of atomic energy, has established a Scientific Committee on the Effects of Atomic Radiation.

It has become evident that radiation due to diagnostic roentgenology and to roentgenotherapy constitutes a substantial proportion of the total radiation received by the human race.

Modern medicine and dentistry have contributed to the control of many diseases and have substantially improved the state of health and prolonged the span of life. This progress has depended in part on the use of radiation in the detection, diagnosis and treatment of disease. There are, however, few examples of scientific progress that are not accompanied by some disadvantages.

Natural irradiation is caused by the following factors: (1) cosmic radiation; (2) "background" gamma radiation from radioactive substances present locally in the earth, rocks and building materials or from disintegration products of radon in the air, and (3) radiation emitted from natural radioelements such as radium, radon, potassium^{40} and carbon^{14} which are incorporated in the human organism.

Artificial irradiation is derived from the following sources: (1) the contamination of the environment, the atmosphere or water by radioactive waste from atomic industries or from users of radioelements; (2) the radioactive fallout and radioactivity resulting from the explosion of nuclear devices; (3) the occupational exposure of certain groups such as dental or medical practitioners, roentgenologists, nurses, workers in the atomic industries, miners of uranium or thorium, and the industrial or scientific users of radiation generators or radioactive isotopes and (4) the use of certain devices which emit radiation such as television receivers, watches with luminous dials and roentgen-ray generators (for instance, those used for fitting shoes).

The amount of artificial radiation varies considerably in different countries. Inadequate information is available as to the over-all significance of these factors.

In the United States, Great Britain and the Scandinavian countries, diagnostic utilization of roentgenographic technics constitutes the predominant artificial source of irradiation of man. The dosage distributed to the population equals that of natural irradiation. The result for the human race may be of significant genetic consequence.

The committee is aware of the importance and the necessity of the use of radiation in dentistry and medicine, but it insists on drawing the attention of the dental and medical profession, and especially of the dental and medical corps of the armed forces of all countries to these facts, and to the significance of a more precise evaluation of the dosage distributed during dental and medical application of radiation of any kind. These organizations and corps can contribute to more complete data on this important subject.

The committee would appreciate receiving, through the appropriate government channels, information regarding methods that may reduce dental and medical irradiation without diminishing the value of roentgenology and roentgenography for diagnostic and healing purposes.

Palais des Nations, Geneva, Switzerland

Moving-beam irradiation with the "TU-1" stand

H. Lokkerbol. *M.Mundi* 2:136-139 Oct.-Dec. 1956

Moving-beam irradiation is not a recently introduced method. Several types of moving-beam technics, similar to those now in general use, were described in the early period of roentgenotherapy, about 50 years ago. At that time, these technics were little used in dental or medical practice because roentgenotherapy was not sufficiently developed, either biologically or technically, to permit the utilization of moving-beam irradiation.

Thirty years later, mainly in the Scandinavian literature, reports appeared in which the favorable effects of rotation roentgenotherapy was described, especially in the treatment of facial or oral carcinomas and other tumors. Success was achieved with the aid of slowly rotating chairs in which patients were placed in such positions that the tumor was situated exactly in the axis of rotation. The roentgen beam, emerging from a stationary tube, was directed at the tumor and penetrated through the involved tissue horizontally and appeared subsequently on the fluorescent screen arranged perpendicularly.

This technic, however, has the following disadvantages: (1) too much time is wasted for

adaptation in each sitting, and fluoroscopy has to be carried out during the entire irradiation, and (2) too much discomfort is caused to patients because they have to be turned around and around in completely darkened rooms.

By using the recently introduced "TU-1" stand, many of these disadvantages can be avoided. This stand consists essentially of a vertically placed wheel to which two carrying arms are attached, diametrically opposite to each other. The x-ray tube is suspended from one arm, and various auxiliary devices such as the fluorescent screen and the ionization chamber of the dosimeter can be attached to the other.

The patient lies comfortably on a horizontal table top that can be tilted. With the aid of fluoroscopy and by consecutive vertical and horizontal directions of the beam, the stand can be adjusted so that the tumor, made visible with a contrast medium, is projected on the screen's center.

The TU-1 stand is equipped with three additional branches, each of which can emit a narrow beam of light to be directed toward the center of the orbit.

As in most roentgenotherapeutic technics, the main problem in moving-beam irradiation is dosimetry. An accurate knowledge of the dose to be directed toward the center is of the greatest importance, because generally the center lies at a comparatively high level and the danger of skin reactions exists.

In instances of oral tumors, the administration of 5,500 r for over five weeks is recommended. This necessitates a tumor dose of approximately 185 r per session. This dose usually is well tolerated by the majority of patients.

Moving-beam irradiation (rotation roentgenotherapy) is indicated in instances of facial and oral tumors in which the exact dimension of the neoplastic growth has been ascertained. It is contraindicated in all instances in which the dimension of the primary tumor or the location of all its metastases cannot be determined. For this reason only a few tumors, in which deep roentgenotherapy is indicated, are suitable for treatment with rotation roentgenotherapy.

At the Netherlands Cancer Institute in Amsterdam, this technic is used successfully in approximately 5 per cent of facial or oral tumors. For this limited number, however, moving-beam irradiation offers undeniable advantages over the customary stationary methods even when the most skillful beam direction technic is used.

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Anthropology

Oreopithecus: Homunculus or monkey?

Loren C. Eiseley. *Scient.Am.* 194:91-100
June 1956

The arrival several months ago in New York City of a paleontologist from Switzerland bearing the bones of a small primate known to science as Oreopithecus has drawn attention to a long-existing debate among anthropologists. The partisans divide into two major schools: the school of the "little men" and that of the "apemen" who see our earliest ancestor as some great shaggy anthropoid. The visiting paleontologist, Johannes Hurzeler, asserted that the bones of Oreopithecus showed human rather than anthropoid affinities. He apparently bases this view on certain technical features of the teeth, including the nonprojecting canines, the vertical bite and the shortened face. Oreopithecus is a lower "monkey," in popular terms. It is not a "man" in spite of "no tooth gaps, no apelike protruding jaw," and so on.

A slow shift of thought or widening of possible horizons has been under way in the study of human evolution. By the beginning of the twentieth century, the ape origins of modern man seemed pretty well established. Many felt that from a form something like that of a chimpanzee it was an easy step to the Java man and thence on to Neanderthal and modern man.

But at the turn of the century the attention of anatomists was attracted to a small, tree-living creature in southeast Asia possessing definite characteristics of a primate. The tarsier (*Tarsius spectrum*), an animal with enormous eyes and about the size of a small kitten, has a brain and other characteristics which ally it to the lower monkeys. In 1918 F. Wood Jones, a distinguished English anatomist, expressed the heretical view that man arose from a tarsioid rather than from an anthropoid ancestry. The ancestors of man, he says, were "small, active animals" already endowed with legs longer than their arms, small jaws without protruding teeth, and enlarged craniums. Man's early tarsioid ancestor walked on the ground, he asserted.

Other primatologists championed the orthodox view that man was a "made-over ape." This view was modified in the 1940's with the discovery in South Africa of the fossil *Proconsul africanus*, a creature of the early Miocene which combined

Fragmentary fossils of Oreopithecus bambolii Gervais were found in Italian coal deposits. These fragments are mandibles photographed from above the crowns of the teeth

characters of early Old World monkeys and great apes. Recently W. C. Osman Hill, the English primatologist, has asserted his belief that man branched off the primate stock below the great ape line.

Primatologists may be forgiven their fumblings over great gaps of millions of years from which scientists do not possess a single complete monkey skeleton, let alone the skeleton of a human forerunner. For the whole Tertiary Period, which involves something like 60 to 80 million years, the story of primate evolution must be read from a few handfuls of broken bones and teeth. Additional fossils must be found before the writing of the story of human evolution can be continued.

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Growth changes in skulls of ancient man in North America

Karl V. Sarnäs. *Acta odont.scandinav.* 15:213-271 Aug. 1957

Although racial differences exist in the growth patterns of living man, nothing is known about such patterns in ancient man. No anthropological studies have been directed toward a comparison of the growth characteristics of ancient and modern man. The availability of a large group of children's remains in the Indian Knoll collection of the Museum of Anthropology, University of Kentucky, not previously investigated, provided the opportunity to study the growth pattern in skulls of an ancient population. The skeletons are those of a rather isolated prehistoric American Indian tribe which, judged by the thickness of the midden debris, lived for about 500 years on the banks of the Green River, Kentucky. The Indians of this tribe were food gatherers and hunters. The age of the Indian Knoll collection has been calculated at 5,302 ± 300 years by radiocarbon dating.

The selected group (referred to as "Ancient Man") was separated into four age groups one of which was divided into males and females. Mean values and standard deviations and coefficients of correlation were computed for each single group and the results analyzed and compared with those of similar studies on living groups of Australian aborigines (Craven, 1952), Bantus (Björk, 1950), and Swedes (Björk, 1947; Lindegård, 1953).

The vertical facial proportions in Ancient Man were not influenced by age or a high degree of dental attrition and did not show any racial differences.

A long narrow face usually was associated with a large upper face. This was also found in Swedes.

The women reached their total skeletal growth earlier than the men, as in modern man.

Posterior facial height (approximately ramus height) showed the largest linear increase (44 per cent) from 3 to 39 years of age, whereas maximum upper cranial height had the smallest (8 per cent). There are significant correlations between the length of the cranium (maximum cranial length) and anterior cranial base length in age groups having growth activity.

Facial prognathism (upper facial angle) decreased with age which was in contrast to the increase found in Swedes and Bantus. In Australian aborigines the facial prognathism did not change.

The cranial base bend decreased with age, as it does in Australian aborigines and Bantus. In Swedes the shape of the cranial base remains the same.

The facial prognathism in Ancient Man is related to the shape of the cranial base, as in Swedes.

There were no significant or even probable correlations between total facial height and mandibular line angle in the 10 to 19 and the 20 to 29 year male groups. In Swedes, a significant correlation exists.

The shape of the cranial base varies independently of the mandibular base curvature, as in Swedes.

The nasal line angle was unaffected by growth. In this, it resembled the Swedes. The occlusal line angle did not change with age in Ancient Man, which is in contrast to the findings in Australian aborigines and Swedes. The mandibular line angle tended to decrease with age in Ancient Man and in Australian aborigines, but did not change in Swedes. The mean value was more than seven degrees smaller in Ancient Man than it was in Swedes.

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Effect of cortisone on the incidence of cleft-palate induced by experimental hypervitaminosis-A

D. H. M. Woollam and J. W. Millen. *Brit.M.J.* No. 5038:197-198 July 27, 1957

Both hypervitaminosis A and cortisone may be implicated in the production of cleft palate in experimental animals. An investigation was carried out to determine whether the incidence of cleft palate produced by hypervitaminosis A during pregnancy was influenced by giving cortisone.

Sixty female white rats of the Wistar strain, each of which previously had given birth to a normal litter, were used. The pregnant rats were divided into five equal groups.

Group 1 received 60,000 I.U. of vitamin A acetate by subcutaneous injection, daily from the eighth day to the thirteenth day, inclusive, of pregnancy. Group 2 received 20 mg. of cortisone acetate, by subcutaneous injection, daily from the ninth to the twelfth day, inclusive, of pregnancy. Group 3 received 60,000 I.U. of vitamin A acetate, by subcutaneous injection, daily from the eighth to the thirteenth day, inclusive, of pregnancy, and 20 mg. of cortisone acetate, by subcutaneous injection, daily from the ninth to the twelfth day, inclusive, of pregnancy.

Group 4 received 60,000 I.U. of vitamin A acetate, by oral intubation, daily from the eighth to the thirteenth day, inclusive, of pregnancy. Group 5 received 60,000 I.U. of vitamin A acetate, by oral intubation, daily from the eighth to the thirteenth day, inclusive, of pregnancy, and 20 mg. of cortisone acetate, by subcutaneous injection, daily from the ninth to the twelfth day, inclusive, of pregnancy.

The rats were killed on the twentieth day of pregnancy, and the young were removed from the uterus. The fetuses were inspected for deformities; only those deformities affecting the palate are considered in the present communication.

Of 69 young in Group 1, none had cleft palate. Of 73 young in Group 2, none had cleft palate. Of 73 young in Group 3, one (1.4 per cent) had cleft palate. Of 77 young in Group 4, 23 (29.7 per cent) had cleft palate. Of 41 young in Group 5, 41 (100 per cent) had cleft palate.

The small number of young in Group 5 was caused by the resorption of all the young in three animals, and of many of the young of another four animals.

The incidence of cleft palate in the young of female rats which received both oral vitamin A and cortisone was greatly increased (100 per cent) compared with its incidence in the young of animals which received oral vitamin A only. Vitamin A given subcutaneously was less effective as a teratogenic agent than when given orally. The results of the experiment suggest that cortisone acts by increasing the sensitivity of the developing tissues and thereby enhancing the teratogenic actions of the hypervitaminosis A.

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Benign masseteric hypertrophy: a syndrome of importance in the differential diagnosis of parotid tumors

Richard T. Barton. *J.A.M.A.* 164:1646-1647 Aug. 10, 1957

Enlargement of either the parotid gland or the masseter muscle may lead to confusion in the diagnosis of neoplastic or inflammatory processes in this region. The enlargement of the masseter muscle gives the appearance of a tumor above the angle at the mandible. All physicians and dentists dealing with this anatomic region should be aware of the syndrome of benign masseteric hypertrophy, in order to avoid psychologically damaging and unwarranted diagnostic procedures.

There are two types of this muscular hypertrophy: (1) a congenital or familial type in which the muscle stands out because of a thin or bony face, giving a "chipmunk" look, and (2) an acquired type, in which the typical patient

is tense and habitually clenches or grinds the teeth in his sleep. In acquired benign masseteric hypertrophy, an etiologically significant primary malocclusion or a secondary wearing down of the teeth surfaces may be found. The syndrome may be unilateral or bilateral, and may result in a lateral "flaring" of the mandible caused by abnormal tension from the muscle. When the condition occurs unilaterally, the facial appearance and distortion of the mandible as shown roentgenographically may be alarming; occasionally a chewing surface may be lacking because of missing teeth, so that the patient chews only on the hypertrophied side. This symptom complex also has been reported in persons who cradle their jaws in the hand while reading, displacing the mandible laterally and placing an imbalance on the two masseter muscles.

An 18 year old college girl complained of a painless swelling below and anterior to the left ear. She had consulted many physicians in the previous five years since the condition had become apparent, and had undergone roentgenographic studies, sialography, complete medical examination, aspiration of the mass, and even an exploratory operation with biopsy. Examination revealed an enlargement over the angle of the jaws that was more pronounced on the left than the right side and that extended from the lower border of the mandible upward to the zygoma. It was moderately soft, poorly demarcated, and did not swell with eating. Clenching the teeth made it more prominent. With pressure, the parotid duct yielded clear saliva; there was no cervical adenopathy. Examination of the teeth revealed that they had been worn down severely. It was learned that the patient ground her teeth so severely in sleep that no one in the dormitory would share a room with her.

A 42 year old film editor complained of earache and swelling of the face of two months' duration. He had been under enormous stress and was aware that, while working, he clenched his teeth. Dental consultation confirmed a pronounced malocclusion and abnormal wear of the teeth caused by habitual grinding.

In both these instances the diagnosis of benign masseteric hypertrophy was made.

Proper therapy often is no more than reassurance to the patient that there is no tumor or abnormality. When the condition is explained, many of the associated complaints disappear. The restoration of the bite to normal is essential, and in certain instances various dental prostheses are required. These may be employed to provide adequate occlusal surface or to prevent grinding habits.

In the past ten years the author has seen more than 30 instances of benign masseteric hypertrophy. Various diagnoses, such as mixed tumor of the parotid gland, lipoma and rhabdomyoma, had been given.

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Osteopetrosis: report of case

H. C. Wittich, A. P. Chaudhry, R. J. Gorlin and A. R. Stoesz. *J.Den.Children* 24:41-44 March 1957

Osteopetrosis (also known as Albers-Schönberg disease, osteosclerosis fragilis generalisata and marble bone disease) is one of the exceedingly uncommon generalized bone diseases which may manifest itself in the oral cavity. It is usually congenital; however, it may not be recognized until some time after birth. In spite of excessive density and increased hardness of the osseous tissues, fractures from trivial causes frequently are observed. The narrowing of the foramens causes increased intracranial pressure with subsequent atrophy of the optic nerves and impairment of vision. The delayed eruption or lack of eruption of the teeth may be attributed to the pressure of dense, thick cortical bone overlying the tooth germs.

A four year old white boy with osteopetrosis was brought to the University of Minnesota School of Dentistry for consultation and management of his dentition. Only seven teeth—five maxillary teeth and two mandibular teeth—were partially or fully erupted. Roentgenograms revealed numerous unerupted teeth.

It was decided to extract all the partially or fully erupted teeth and insert complete upper and lower dentures. Two teeth were extracted the first time. There were no postoperative complications, and the remaining teeth were extracted. Complete upper and lower dentures were made and inserted in the patient's mouth. The dentures

were prepared routinely. Because of the small size of the arches, however, both deciduous and small permanent natural teeth were reproduced. The patient has been wearing the dentures for more than a month with comfort, and there appears to be a noticeable improvement in masticatory efficiency. It is possible that pressure applied by the dentures may stimulate emergence of the unerupted deciduous and permanent teeth, which would require reconstruction of the dentures.

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Dental focal infection, a problem for physicians and dentists
(Die odontogene Herdinfektion als therapeutisches Problem für Arzt und Zahnarzt)

C. H. Fischer. *Neues Zahnhk.* 3:15-16, 1957

Dental focal infection implies the presence of pathogenic microorganisms in locally circumscribed regions of the oral cavity, sometimes without causing symptoms. From this site (focus), the bacteria, spirilla or viruses may enter the blood stream and are transported to other regions of the human organism where their activities produce pathologic or traumatic changes of tissue characterized by objective symptoms.

In recent years, dental and medical researchers have distinguished between "focus of infection" and "focal infection." The second term is more inclusive and implies that there exists a circumscribed infection which is bacterial in nature and is capable of dissemination which may result in systemic infection of contiguous or noncontiguous parts.

In dentistry, the suggestions of physicians, based on unverified theories on dental focal infection, often have brought unfavorable results. Although in operative and prosthetic dentistry, procedures now are favored which obtain smoother fillings and better hygiene in the gingival region and the practice of careless devitalization of teeth has been abandoned, much harm was done because an enormous number of healthy teeth were extracted unnecessarily, and all pulpless teeth were eliminated even when there was no evidence of periapical disease.

Current practice in the use of antibiotic and other chemoprophylactic agents for the prevention and treatment of dental focal infection and bacteremia is as follows: intramuscular injection of one of the longer acting types of penicillin. Adequate doses of chlortetracycline, chloramphenicol or oxytetracycline are equally effective.

If the use of antibiotics is contraindicated because serious results may follow administration to patients who have become sensitized as a result of previous contact with these drugs, sulfadiazine, sulfamerazine or sulfamethazine can be administered.

These preventive measures in dental and medical practice have significantly decreased the incidence of systemic diseases which may (or may not) be associated with dental focal infection.

To extract teeth with chronic or acute infection or all pulpless teeth is certainly not the solution of the problem. Unless gingival infection and periodontal pockets are treated adequately and simultaneously with the removal of infected teeth which cannot be preserved, the desired result will not be produced.

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Multiple tooth formation (Zwillingszähne)

W. Kloeppel. *Fortschr.Kieferorthop.* 17:249-251 Jan. 1957

Multiple teeth occur in various forms and sizes. Euler introduced the following classification: (1) geminated teeth; (2) fused teeth, and (3) concrescent teeth.

Gemination or true twin formation is the condition in which an isolated tooth germ has divided during the period of initial tooth development. A double crown with a single root and root canal is formed. Geminated teeth appear comparatively frequently in the deciduous dentition, mainly in lower incisors. These geminated incisors have crowns wider than normal, in which shallow grooves run longitudinally from the center to the incisal edge. The occurrence of geminated deciduous incisors in four generations was observed. The abnormality appeared in females only, and was transmitted from mothers to daughters.

Fusion is the condition in which two normally separate tooth germs become united. If fusion occurs in the early period of tooth development, the crowns become completely united. The roots, however, remain separated. If fusion occurs in later developmental periods, the roots may be united with separate crowns. In all instances of fused teeth the dentin is common to both teeth. Occasionally supernumerary teeth are fused to normal teeth. Most frequently, upper central incisors or first and second molars are involved in such a fusion.

Concrescence is the condition in which the cementum of two teeth is united. It occurs in originally separate teeth at a later developmental period than gemination and fusion. It may appear before or after tooth eruption. Histobiologic examination of specimens taken from the region of concrescence revealed that the dentin of the tooth roots was separated and the cementum only was united. Roentgenographic examination often determines the existence of unerupted concrescent teeth.

If multiple teeth are present, especially in the anterior region, the dentist must decide whether tooth extraction, orthodontic or prosthetic treatment is indicated to obtain maximum function and esthetics.

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Ulcerating stomatitis associated with streptomycin therapy

Raymond Parkes. *Brit.M.J.* No. 5045:628 Sept. 14, 1957

Stomatitis developed in two patients undergoing streptomycin therapy for tuberculosis.

A 57 year old woman began early in May to receive streptomycin, 1 Gm. daily, and isoniazid, 400 mg. daily. In mid-June a bilateral linear stomatitis, corresponding to the line of the occluding surfaces of the molars, developed, and, after two to three weeks, showed patchy ulceration with heaped-up, yellow edges which were not detachable. The region was most painful. Because of fairly severe and generalized caries, her teeth were extracted. The stomatitis spread over the inner surface of the cheeks and lips, which were fiery red and very painful, with tough yellow edges on the ulcerated regions. When drug therapy was discontinued, the mouth lesions improved slowly, but when streptomycin again was given, painful cheilitis and stomatitis recurred.

A second case history involved a 54 year old man and was similar to the first case. When streptomycin was recommenced with both patients, relapse was rapid. Apart from the antituberculous drugs, no other factors common to both patients could be found.

Occurrence of the mouth lesions when streptomycin was administered, recovery when it was withdrawn, freedom from ulcerating stomatitis while receiving para-aminosalicylic acid (PAS) and isoniazid, and quick recurrence when streptomycin was reintroduced, strongly suggest that the latter drug was in some way responsible.

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South American blastomycosis: report of six cases

(Blastomicosis suramericana: Seis casos de blastomicosis en la cavidad bucal)

Julián Cadavid Gutiérrez. *Temas odont.* 6:69-85 Nov. 1956

Blastomycosis is fairly common in Colombia and yet up to the present only one case appears to have been reported in the Colombian literature. The disregard for or lack of knowledge about the disease suggested by this paucity of published reports apparently is due to the fact that a diagnosis of blastomycosis cannot easily be made on the basis of the clinical findings, although it can be established with comparative ease by the usual laboratory procedures. The diagnostic difficulties and clinical course of the disease are illustrated in six new cases reported by the author.

Blastomycosis is a chronic, progressive, usually fatal condition affecting the skin, mucous membrane, lymph nodes and internal organs. Unlike North American blastomycosis, which is caused by *Blastomyces dermatitides*, the South American form of the disease is caused by *Blastomycosis brasiliensis*, a yeastlike organism that spreads by simple or multiple gemmation and exogenous sporulation in the tissues. It probably exists as a saprophyte, especially on plants; in fact, most patients with buccal lesions due to

blastomycosis are in the habit of chewing plant substances or using plant fragments as toothpicks. Moreover, the disease affects chiefly farmers and agricultural workers, with men naturally predominating.

The clinical picture varies greatly according to the site of the infection. In general, the condition appears in four forms: (1) external, affecting the skin and mucosa; (2) lymphatic, characterized by generalized swelling of the lymph nodes, beginning with those in the neck; (3) visceral, in which the primary lesions occur in such organs as the spleen, liver, intestines or lungs; and (4) mixed, in which the other forms are either associated or appear in succession. Involvement of the lungs, which is an almost constant finding, occurs in 84 per cent of all cases, making chest roentgenography necessary as a routine procedure in every patient in whom blastomycosis is suspected.

Among the external forms of blastomycosis, the mucosal form, with which this report is concerned, is the one most frequently encountered, especially in the mouth. The lesions are characteristically granulomatous, appearing either as reddish spots or with a yellowish base. Often they occur on the mucosal surface of the gums, palate, cheeks and tongue, and they usually extend to the surrounding skin, where they assume an ulcerovegetative or pustulopapular character. A similar process may affect the nostrils, though less frequently. In the oral mucosa, the lesions may be limited to the vestibular region or they may extend backward in severe instances to involve the trachea and the pharynx, even leading at times to the destruction of the glottis and the epiglottis. Although the mucosal lesions may be slow in invading the lymph vessels, they are usually accompanied by local swelling of the lymph nodes, followed eventually by ulceration and pus formation. Many cases of blastomycosis that have been described as primarily lymphatic are said by certain authors to have had their origin in the mouth. An important guide to the differential diagnosis is salivation, which was a constant finding in the patients in this series.

The granulomatous lesions of blastomycosis, especially in the lymph nodes and lungs, can easily be mistaken for those of tuberculosis. This is one of the reasons why recovery of the parasite is essential to the establishment of the diagnosis. Only one of the author's six patients entered the service with an accurate diagnosis. The diagnoses in two were gingival fibromatosis and tuberculosis, and in the other three carcinoma, leukoplakia or syphilis. Two of the patients had had dental extractions (of all the teeth in one patient) as a result of the erroneous diagnoses.

Direct examination, which is the laboratory procedure that can most easily be carried out by stomatologists, is also the simplest and most accurate (100 per cent in these cases). The characteristic structure of the parasite usually makes it easy to identify.

The prognosis is poor, although some benefit may be derived from the sulfa drugs, which check the growth of the parasite. A more effective remedy is stilbene, the fungistatic effect of which was accidentally discovered in 1952. Stilbamidine, 2-hydroxystilbamidine, and propamidine have all been found useful in North America. The author, however, was unable to obtain these drugs, and none of the six patients left the hospital cured, although some were improved as a result of other therapeutic measures.

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Aetiological factors in mouth cancer: an approach to its prevention

Ernest L. Wynder and Irwin J. Bross. *Brit.M.J.* No. 5028:1137-1143 May 18, 1957

The histories of 543 men and 116 women with cancer of the oral cavity were compared with the histories given by 207 men and 246 women suffering from other conditions and selected to be of the same age, religion, hospital status and socioeconomic background as the patients with cancer of the oral cavity.

Smoking was found to be an important factor in the development of cancer of the mouth in men. Three per cent of the study group were nonsmokers, in contrast to 10 per cent of the controls. Twenty-nine percent of the study group had smoked 35 cigarettes or the equivalent of cigars or pipes per day for at least 20 years, in contrast to 17 per cent among the controls.

Heavy alcohol consumption, particularly of whiskey, is a significant factor. Forty-six per cent

of the controls were occasional drinkers or non-drinkers, compared with 26 per cent of the men in the study group. In contrast, 33 per cent among the study group drank in excess of seven "shots" of whiskey or the equivalent of beer and wine per day or were sporadic drinkers, compared with 12 per cent among the controls.

A history of syphilis or positive serology was found among 11 per cent of the study group and among 5 per cent of the controls.

Among male patients with oral cancer, 44 per cent were edentulous compared with 28 per cent among the controls. Sixty per cent of the study group wore dentures, compared with 63 per cent among the controls. Among the denture wearers in the study group, 11 per cent gave a history of irritation from dentures, compared with 7 per cent among the controls, a difference without significance. Six per cent among the study group complained of sharp teeth compared with 4.7 per cent among the controls. Dental hygiene was somewhat poorer among the study group, a finding not related to alcohol or tobacco consumption.

Analysis of previous disease showed no significant differences between study and control groups with the exception of a high level of leukoplakia, 19 per cent, present in the study group. Among factors studied which did not yield significant findings were nutritional intake, food temperatures, a history of general trauma to the oral cavity and family history of cancer.

In general, the data for women confirmed the previous observations in men.

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Glossitis and the pre-anaemic stage of pernicious anaemia: diagnosis by simple methods

J. F. Adams. *Lancet* 272:1120-1121 June 1, 1957

Once suspicion has been aroused by the presence of glossitis in the patient, the diagnosis of pernicious anemia may be established by simple methods, including gastric aspiration, bone marrow biopsy and response to treatment with vitamin B_{12}. In the three cases described the diagnosis was also confirmed by microbiological assay before treatment.

A 40 year old woman complained of soreness of the tongue of eight months' duration. The tongue resembled raw beef. A 76 year old woman complained of soreness of the tongue of a year's duration. The tongue was smooth and red at the tip. A 66 year old woman complained of glossitis for five years and dyspepsia for two years. Her tongue was smooth but not red. In each instance the diagnosis of pernicious anemia in the pre-anemic stage was confirmed and the administration of serum vitamin B_{12} relieved or abolished the glossitis.

Vitamin B_{12} deficiency should be suspected in every instance of glossitis where no other obvious cause is found.

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The relation of hydrocortisone injections to cleft palate in mice

Theodore H. Ingalls and Francis J. Curley. *New England J.Med.* 256:1035-1039 May 30, 1957

Hydrocortisone acetate was administered as a teratogenic agent to nine batches of unpedigreed white mice in the latter stage of pregnancy. Each batch was injected on a single day of pregnancy, staggered between the ninth and seventeenth days of gestation, to determine on which day the agent was most effective in producing cleft palate.

The twelfth day of pregnancy ± 1 was the critical time at which to administer the hormone if cleft palate was to result. Besides timing, the outcome was determined by the size of the dose —whether 5 mg. of hydrocortisone acetate was injected as a single dose or whether the hormone was given in two injections of 5 mg. each. The induced defect was always in the midline and was not associated with cleft lip at any time, an observation in noticeable contrast to the cleft lip found in association with the inherited cleft in pedigreed (A/jax) mice.

Experimental data show that the acquired, median-line, posterior cleft is dependent on the state of palatal development reached when the injection was given. The findings indicate that it is not necessary to use mice of particular genetic constitution in order to induce cleft palate as a

congenital malformation in a high percentage of animals treated. A critical prerequisite with hydrocortisone is to initiate treatment several days before the palatine shelves have begun to fuse, a process that occurs normally on or about the fifteenth day of pregnancy in these mice.

If the findings could be applied to human populations, they would emphasize a necessity for distinguishing between anterolateral and posterior midline cleavages of the palate. The former characteristically involve the alveolar regions, are frequently associated with cleft lip and are clearly inherited in a large percentage of instances, whereas the latter frequently appear as isolated events and in at least two instances have been reported in relation to cortisone therapy during the first two months of pregnancy.

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Resorption of dentin and cementum in teeth

Irwin Walter Scopp. *J.D.Med.* 11:220-224 Oct. 1956

Resorption of dentin and cementum in teeth is a unique disease which has received scant attention in current dental literature. Resorption of teeth may be either internal or external. Internal resorption is a disease in which the dentin of a tooth undergoes metamorphosis to a vascular granulation tissue devoid of odontoblasts. Related to this is external resorption, which dissolves the cementum first and then the dentin.

The etiology of the disease is obscure and the prognosis poor. Where resorption has not progressed too far, root canal therapy is the treatment of choice. If the area of resorption is advanced or if it is so situated as to preclude root canal therapy, extraction of the tooth is indicated.

As the disease process is asymptomatic until far advanced, it is important to detect resorption on routine full mouth roentgenograms. The dentist should be prepared to recognize resorption in its early stages.

Resorption of dentin and cementum is variously referred to as idiopathic resorption, spontaneous intermittent resorption, sporadic resorption and metaplasia. The pathogenesis of internal resorption is idiopathic in origin.

The normal pulp is made up of a delicate, loose connective tissue with a lining or border of odontoblasts around the periphery. Around this is a straight housing of dentin. In internal resorption, considerable changes occur. The odontoblasts are not present; instead, a vascular granulation tissue pervades the entire pulp chamber. This increased vascularization sustains and accelerates resorption. The pulp becomes increasingly larger at the expense of the dentin which is no longer straight and smooth. Instead, the dentin appears irregular as if eaten out, with many lacunae.

When the process of resorption reaches the enamel, a pink spot may appear, caused by the highly vascular tissue and the extravasation of red blood cells in the chamber being seen through the translucent enamel. The color changes to blue as the red blood cell undergoes degeneration. At this stage the tooth may fracture easily under the biting stress.

Two case histories illustrate aspects of the disease.

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Antibiotic treatment of actinomycosis of the jaw (Zur antibiotischen Therapie der Aktinomykose)

F. Lentze. *Fortschr.Kief.Ges.Chir.* 3:306-313, 1957

Actinomycosis, a parasitic, infectious, inoculable disease which is frequent in cattle, horses and pigs and which occasionally can be communicated to man, produces a chronic inflammation of the jaws and formation of slow-growing granulomatous tumors which intermittently heal and recur.

The causative microorganisms are strains of *Actinomyces bovis, A. hominis* or *A. israeli* (anaerobes) and certain species of Nocardia (aerobes).

Because this disease is comparatively rare in man and pure cultures of the causative bacteria are difficult to obtain, as yet only a few strains of *A. israeli* have been isolated and tested *in vitro* for their resistance to antibiotics.

Recent investigations carried out at the Institute for Hygiene of the University of Cologne, Germany, indicate that *A. israeli* is sensitive to almost all antibiotics used in dental practice with

the exception of polymyxin B. In strains of *A. israeli* no development of primary or secondary resistance to antibiotics was observed.

In the antibiotic treatment of actinomycosis of the jaw it must be recognized that mixed infection is the rule and not an exception. In all 548 instances of actinomycosis of the jaw investigated at the Institute, and also in 360 instances previously examined by Per Holm, mixed infection was present.

Microscopic examinations revealed that the anaerobic bacteria most frequently encountered in association with *A. israeli* may become resistant to penicillin, erythromycin and streptomycin. Little is known, however, in regard to the resistance to antibiotics of other microorganisms which are co-factors in mixed infections.

The Institute for Hygiene of the University of Cologne requests dentists and oral surgeons to send specimens of pus and biopsy material that have been taken from patients with actinomycosis of the jaw.

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Migraine, with special reference to relation to occlusal disharmonies

Matthew Eisenman. *J.Am.Osteopath.A.* 56:677-680 July 1957

Migraine should receive the attention of both dentist and physician. Of many measures attempted in the treatment of migraine, none has proved particularly successful. The problem should be reconsidered, starting with the structure of the head. Sicher (1949) stated that, because of the pneumatic cavities in the upper facial region, it is necessary to determine that the septum is straight. Septal deviation is a vital consideration in the proposed treatment of migraine.

If the normal septum is straight, the nasal conchae should be in correct relationship and in correct position in the skull. The pneumatic cavities in the upper facial region serve as a partition and a strut to support part of the skull. Septal deviation may prevent the free flow of air in the pneumatic cavities and cause a breakdown in function in parts of the skull.

In instances of bite distortion resulting from premature loss of posterior teeth, the dentist may be able to locate and palpate the pterygoid process of the sphenoid bone. Any tenderness aroused by such palpation is indicative of the dental lesion mechanism causing migraine.

In normal breathing, the horizontal plate of the palatine bone has a floating or rocking action which can be palpated by the index finger during the diagnostic examination. Through change, the pterygoid process and the horizontal plate of the palatine bone may become fixed, resulting in pain over the pterygoid process. This indicates that a shift has occurred which may cause pressure on some of the cranial nerves in the skull. It also may cause vascular disturbance in the brain covering, or dura mater, as described by Kennedy (1933).

Time and effort should be spent with a patient suffering from head pains. The deviation of the septum and the relationship of the maxilla with the sphenoid bone must be corrected before any dental work is begun. This is done by slowly springing the involved maxilla with the right forefinger straddling the wing of the sphenoid bone on the same side and the thumb pressing on the palate. During this correction, it is essential for the patient to breathe normally; otherwise the dentist may construct appliances and restorations to a deformity caused by the shift of the sphenoid bone and the shift of the horizontal plate of the palatine bone. It is important that the septum be corrected, or the lateral walls of the nose freed, so that enough air may be received for the pneumatic cavities.

The treatment proposed includes correction of the septum and the position of the palatal bone by means of select tooth grinding. Establishment of correct occlusion relieves excessive stresses which produce occlusal trauma and improper tooth wear.

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Endodontics

Traumatic root fractures

(Das Verhalten wurzelfrakturierte Zähne)

Georg Kovács and Rudolf Rehák,
Österr.Zschr.Stomat. 52:570-576 Nov. 1955

Root fractures have either spontaneous or traumatic causes. In both types, the peripheral fragments usually remain loose in the alveolar process.

Spontaneous fractures occur frequently in aged patients who have lost a number of teeth even before the fracture occurred. The pulp and the periodontium take part jointly in the healing process, and the fragments are fused together by connective tissue. A healed tooth fracture, however, can never become as rigid as a healed bone fracture after setting.

Roentgenographic, clinical and histologic examinations of five patients with traumatic root fractures were made recently at the Dental Training Institute of Budapest, Hungary. The results revealed that a restoration of connective tissue occurred, and that the teeth with fractured roots were able to function for several years.

For esthetic reasons, it was necessary in two of the patients to extract the teeth that had healed properly and had functioned for several years. These teeth were extracted simultaneously with a removal of their faciobuccal alveolar wall.

Case 1. The patient, a 51 year old man, had sustained a traumatic fracture of the root of the left upper central incisor from a blow. This fracture had occurred about four years prior to examination. A secondary infection accompanied by a granuloma had developed. The histologic description was as follows: The apical quarter of the root was fractured but the fragments were held together by connective tissue. In the fractured region and on one side of the root apex, the periodontal tissue showed signs of granulation. Resorption took place in a half of the apical fragment. The granulation was overlapping the line of fracture and also had caused resorption on the surface. In the root canal of the larger fragment, necrotic tissue elements were observed.

Case 2. The patient, a nine year old boy, had sustained a traumatic fracture of the root of the right lower central incisor from the kick of a horse. This fracture had occurred almost six years prior to examination. The fragments had remained in position, the tooth had functioned satisfactorily and had caused no pain. A second root fracture of the same tooth was caused by biting on a metal spoon; the tooth became loose and radiating pain appeared. The histologic description was as follows: The fracture occurred in the middle third of the root near the gingival margin. In the gingival fragment and in the crown the structure of the pulp was unchanged.

In other parts, however, the fine fibrillary pulp tissues now showed a coarse pattern. The radicular pulp was interspersed with vacuoles separated by compact connective tissue. The odontoblastic layer showed signs of a vacuolated destruction and a few dilated blood vessels were observed. In the apical fragment, the longitudinal fibers were multiplied. Near the fracture line, no odontoblasts existed. On the dentinal surface and in the fracture line, granulation tissue was observable.

Case 3. The patient, a 40 year old man, had sustained a fracture of the root of the left lateral upper incisor in a bicycle accident. The fracture had occurred about 15 years prior to examination. No pain had appeared then and since, the tooth was slightly movable and now seemed to be firm in its alveolus. It functions satisfactorily, but is not sensitive to electrical and thermal stimuli.

Case 4. The patient, a 19 year old boy, suffered a complicated coronal and root fracture in an industrial accident. After the pulp chamber was opened, the root canal was filled and tooth fixation obtained.

Case 5. The patient, a 10 year old girl, had sustained a traumatic root fracture in a traffic accident. The fracture had occurred three years prior to examination. All teeth were in poor condition and in faulty occlusion. Orthodontic treatment with fixed upper labial arches brought the desired improvement. The teeth now are sitting firmly in the alveoli, they are not elongated, and normal function is maintained.

Roentgenographic, clinical and histologic examinations revealed that in most instances of traumatic root fracture, if necrosis of the pulp and no secondary infection appear, a full recovery is possible.

After the pulp chamber is opened, the root canal should be filled prior to the final fixation of the tooth involved. If proper treatment is given, the fracture will heal, and the tooth can remain in position for several years without a severe decrease in functional ability.

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Pulpotomy by electrocoagulation

A. J. Laws. *New Zealand D.J.* 53:68-70
April 1957

Today vital pulpotomy is widely used in the treatment of exposed vital pulps. The coronal portion of the pulp is excised under local anesthesia, and the raw surface of the remaining radicular portion is covered with calcium hydroxide. About 60 per cent of vital pulpotomies are claimed to be successful, success being attributed largely to the calcium hydroxide. Failure of the remaining 40 per cent has been attributed to chemical irritation of the pulp by drugs, to mechanical irritation by embedded chips of dead dentin, infection, desiccation, persistent hemorrhage and inhibition of swelling of the pulp by tightly packed dressings.

Electrocoagulation appeared to afford a means of controlling the adverse factors. Drugs could be avoided, chips of dentin could be confined in a coagulum, hemorrhage could be arrested and tissue could be sterilized.

In the experiment reported, the exposed pulps of 50 teeth were treated by electrocoagulation. All patients were between the ages of 11 and 27 years.

A pulpotomy was considered successful when a layer of radiopaque tissue had formed in the pulp chamber, when no discomfort was reported by the patient, and when the responses of the tooth to heat, cold and percussion were normal. After four months, 12 per cent of the pulpotomies treated by electrocoagulation were judged successful; 59 per cent did not meet all the criteria

for success, but did not show unmistakable signs of failure; 29 per cent of the teeth had to be extracted.

Seventy-six per cent of the patients had no discomfort immediately after the operation, 18 per cent experienced slight tenderness for two to three days, and 6 per cent had severe pain.

The percentage of clinical successes with the technic was lower than is usually claimed for pulpotomies in which a covering of calcium hydroxide was used, but few of the reported series have been rigorously assessed. In the present series no degree of organization of the pulp was seen comparable with that evoked by calcium hydroxide under experimental conditions.

Of practical value was the demonstration that when a pulp is to be amputated, it should be amputated immediately it is exposed; nothing is gained by dressing the tooth with zinc oxide-eugenol cement; pulps so dressed are difficult to anesthetize and liable to bleed freely.

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Focal infection and bacterid in particular from the point of view of dental disease

Tsuguo Hamaguchi and Tokihiro Tajima.
Mie M.J. 7:1-14 Feb. 1957

A 31 year old physician had been suffering for five years from recurrent itching vesicular eruptions on the palms of both hands. Fungicidal ointments and roentgenotherapy had proved noneffective. In July 1953 he underwent the extraction of a maxillary second molar because of dental pain. The dental lesion was diagnosed as radicular granuloma. Three days after the extraction a remarkable improvement of the palmar lesions was noted.

Four months later the vesicular eruptions recurred in a mild form. Roentgenograms of the teeth revealed two radicular granulomas and a radicular cyst. The three teeth were extracted. Bacterial examination of the exudate from one granuloma and the cyst revealed *Staphylococcus albus* from the former and Neisseria from the latter. Within one week the skin lesions on the palms began to clear, and a year after these extractions the lesions had not recurred.

The case is comparable with that of the pustular bacterid reported by Andrews (1940).

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Culture media used for bacterial control of root canals

(De toepassing van bacteriologische controles in de Endodontie)

J. van Amerongen, W. J. Slaterus and O. Eggink.
Tschr.tandheelk. 64:495-519 July 1957

At the department for conservative dentistry of the Dental Institute of the University of Utrecht, the Netherlands, different bacterial culture media were investigated in order to establish whether any of them is superior to the brain-heart infusion broth (Difco) in obtaining mass cultures from infected root canals.

Living cell cultures of streptococci, staphylococci, gram-positive and gram-negative microorganisms, lactobacilli, sarcinae, *Corynebacterium diphtheriae*, Actinomycetaceae, sporiferous protozoan, yeasts and fungi were established in the following media: (1) sheep blood bouillon; (2) Levinthal's agar; (3) Brewer's thioglycollate with 0.05 per cent agar, and (4) trypagar (Trypticase) dextrose broth.

Cultures were kept in screw-capped bottles and cotton-plugged tubes to establish which kind of container is more suitable for use in endodontic practice.

Cultures were taken before and after cavity preparation, and after application of therapeutic agents. Finally, a control culture was obtained immediately before the filling of the root canal.

Altogether, 4,740 mass cultures were obtained by inserting an absorbent point into the root canal for three minutes, by collecting pulp tissue, and—in later stages of endodontic treatment—by taking periapical moisture and dentin particles from the wall of the root canal.

After thorough investigation and comparison, the following conclusions were reached: (1) with the exception of Levinthal's agar, which appeared to be inferior, the quality of the other culture media was found to be approximately equal, and (2) Brewer's thioglycollate, recommended by many authors for detecting anaerobic micro-

organisms, obtained no more positive cultures than other culture media which previously were used to obtain aerobes exclusively.

This was determined in vital and necrotic pulps, with cultures taken in all stages of endodontic treatment and with initial (control) cultures.

For endodontic practice, the results obtained with the brain-heart infusion broth appeared highly favorable. In using this culture medium, no significant difference was observed when either screw-capped bottles or cotton-plugged tubes were used.

In instances in which two subsequent cultures were taken during one endodontic treatment, the results were almost identical.

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Bacteriologic control in root canal treatment

(Die bakteriologische Kontrolle des Wurzelkanals)

F. Riedener and L. Castagnola.
Schweiz.Mschr.Zahnhk. 67:131-149 Feb. 1957

Methods of root canal treatment have often been rather unscientific and lacking in the application of modern bacteriologic knowledge. Microorganisms present in chronic periapical infection do not always cause a putrid odor. The futility of determining whether a prepared root canal is sterile by the sense of smell only is obvious. Experience proves that clinical symptoms are unreliable in establishing the necessity of root canal treatment.

Endodontists who use bacteriologic control of root canals in their practices are convinced of the soundness of this method. Within 72 hours of incubation, cultures of various bacteria can be obtained from seemingly clean, dry and odorless root canals.

When, according to clinical signs, the prepared root canal appears to be ready to receive the filling material, regardless of the medication used, only bacteriologic control by culture tests can establish the absolute or relative sterility.

Although bacteriologic tests cannot be recommended in all instances of routine practice, this method will teach dental students the importance of a thorough sterilization of infected root canals.

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The effect of pressure on the healing of the exposed human dental pulp

Viktors Kalnins. *J.D.Res.* 36:437-446 June 1957

It is generally assumed that in applying drugs to the exposed surface of the dental pulp, unless extreme care is used to prevent any pressure, the tissue will be damaged. A study was undertaken to determine what changes occur in the exposed pulp as a result of pressure and in which way the pressure affects the healing of the pulpal wound.

The effect of pressure, obtained by pressing a thick paste (composed of calcium hydroxide, sulfathiazole and strontium salts) on exposed, healthy pulp tissue was studied in 48 permanent teeth (mostly bicuspids) in school children and adults.

Clinical examination within the first days after the operation showed that, in spite of strong pressure on the pulp, only one in nine subjects experienced minor discomfort of short duration from percussion or on application of cold. The remaining teeth were asymptomatic throughout the observation period. Roentgenograms did not reveal any loss of periapical bone.

Histologic examination of extracted teeth showed that the pressure affects only the superficial portion of the pulp. Only a localized compacting occurred, the compacted tissue stroma appearing as a fibrous capsule. Below this capsule, the tissue remained undisturbed.

Restoration of a dentinal wall developed in two ways: (1) formation of a bridge directly below the compacted portion of the pulp, and (2) establishment of a dentinal bridge, preceded by formation of a dysfunctional zone of pulpal tissue.

The application of pressure favored the healing of the pulpal wound since it controlled postoperative bleeding.

The opinion that pressure must not be applied to the exposed pulpal surface for fear that the tissue might be destroyed does not hold true.

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Periodontics

Cancer of the gingiva

Sam A. Wilkins, Jr., and William R. Vogler. *Surg.Gyn.& Obst.* 105:145-152 Aug. 1957

Eighty-one malignant neoplasms of the gingiva representing almost 1 per cent of 8,828 cancers seen over a 19 year period from 1937 to 1956 are reported. The ages of patients with cancer of the gingiva ranged from 39 to 80 years with the largest number occurring in the seventh decade. Forty-four (54 per cent) were women and 37 (46 per cent) were men. Cancer developed in 50 per cent of the women before the age of 60 and in only 30 per cent of the men.

Seventy-nine lesions were squamous cell carcinomas, one was an adenocarcinoma and one a chondrosarcoma. Sixty-four lesions were located on the mandibular gingiva and 17 on the maxillary gingiva.

Twenty-one of the men (57 per cent) used tobacco. Of these, 12 (57 per cent) chewed tobacco or chewed and smoked. The remainder admitted smoking. Of the 28 women known to use tobacco 22 (79 per cent) used snuff, 1 used snuff and smoked cigarettes, 3 only smoked, and 2 denied the use of tobacco. It appears that the use of tobacco, particularly chewing tobacco and snuff, may play a part in the etiology of gingival cancer.

The role of dentures in the development of cancer could not be established. No significant differences concerning the occurrence of leukoplakia and multiple cancers existed between those known to wear dentures and those known not to have dentures.

Leukoplakia generally has been considered precancerous. Forty per cent of the patients had leukoplakia on some portion of the buccal mucosa in addition to the cancer. In many, it seemed that the cancer arose in an area of leukoplakia. Fourteen patients (17 per cent) had one or more cancers in the mouth either preceding or following the gingival lesions. The frequency of leukoplakia in these patients was significantly higher than in those patients with one cancer.

Although irradiation therapy has gradually given ground to surgery as the method of initial treatment, irradiation appears just as effective as surgery when the cancer is still confined to the gingiva. It is slightly less effective when lesions have spread to adjacent structures and of almost no curative value in treating regional metastases.

Surgery and irradiation are both of value in the initial treatment of limited lesions. The selection of one of these procedures over the other is made on the basis of certain factors other than the anticipated chance of cure. Surgery will salvage some irradiation failures, and irradiation will salvage an occasional surgical failure. Surgery constitutes the preferred treatment of certain extensive malignant processes of the gingiva, particularly those which invade bone and those in which irradiation has failed. Local recurrence remains the major problem.

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Dental foci of infection in arthritis: report of a case

Stephen P. Mallett. *Oral Surg.,Oral Med. & Oral Path.* 10:824-827 Aug. 1957

Nineteen years after a 30 year old man was informed that he probably would be confined to bed or permanently disabled with a form of arthritis, he is well and an active businessman, free of his complaint as the result of the extraction of four infected teeth.

Although the hospital, clinical and laboratory examinations at that time were satisfactory and complete, there was an error in the dental roentgenographic examination and diagnosis. The teeth were stated to be free of infection, and the patient could look forward only to an existence of pain and disability.

After having consulted several physicians and having been in several hospitals, the patient came to a hospital where the surgeon decided

that the roentgenologist should be consulted for a definite determination of whether the patient's teeth were infected. The hospital roentgenographic report was negative. The surgeon called a dentist who examined the hospital roentgenograms and pronounced them inadequate, incomplete and unsatisfactory. The surgeon and the dentist took the patient by ambulance to the dentist's office for roentgenograms, which revealed two mandibular first molars with extensive periodontal disease, an impacted maxillary cuspid with bone degeneration, and a proximating maxillary nonvital lateral incisor with apical infection. Caries without other pathologic conditions also was evident.

The four infected teeth were removed and the periodontal infection excised. Improvement was slow but steady. The patient returned to work in three and a half months. His infection was of dental origin. Twenty years later he wrote in a letter: "I am happy to report that I have had no return of the pain in my back and leg. When that trouble finally cleared up, it must have been a complete cure, for I have been free from pain for many years."

Either periodontal or periapical infection of the teeth may be an etiologic factor in certain types of arthritis.

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Tissue reaction to metal wires in healthy gingival pockets

Jens Waerhaug. *J.Periodont.* 28:239-248
July 1957

During orthodontic treatment and the fixation of teeth in patients with periodontal disease, ligatures frequently are placed below the gingival margin of pockets. An investigation was undertaken to determine whether permanent damage will result from such treatment or whether more or less complete healing will result.

Ligatures of soft stainless steel (0.25 mm. thick), annealed iron or brass were placed around 21 teeth in four dogs and two teeth in one monkey, in healthy gingival pockets. The ligatures were applied around the teeth in such a way that, when tightened they slid down to the bottom of the pockets. In most instances the ends disappeared completely under the gingival margin, in other instances they extended slightly above it. Histologic sections were made and examined after 7 to 206 days.

The following conclusions were reached:

1. Stainless steel wires that are placed in healthy gingival pockets for orthodontic purposes are usually well tolerated by the soft tissue.

2. Within a week, stainless steel wires may be covered completely by epithelium, which apparently adheres to the wires in the same way as a normal epithelial cuff adheres to the tooth surface.

3. The epithelial cuff between the steel wire and the gingival margin usually will regenerate, and approximately normal conditions will be reestablished in the pocket.

4. When the ligatures are pressed into the periodontal membrane below the cementoenamel junction, the connective tissue fibers coronal to the wires usually will regenerate in a short time, although a limited downgrowth of epithelium may be expected in regions where the wire lies just below the cementoenamel junction.

5. Iron wires, although comparatively well tolerated by the tissue, seem to facilitate retention of bacterial plaque.

6. Bacterial plaque which has grown along the wire may, under favorable conditions, be retained on the tooth surface below the gingival margin and remain there after the wire is removed.

7. When orthodontic ligatures are removed from permanent teeth, the tooth surface should be cleaned thoroughly so that any subgingival bacterial plaque is removed.

8. When the precaution just mentioned is taken, a complete healing with re-establishment of a normal sterile pocket may be expected after removal of the wire.

9. The application of stainless steel wires in healthy gingival pockets in young persons is a justified method.

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Pedodontics

Extraction of the first permanent molar in children and its influence on the character of displacement of adjacent permanent teeth

(Vliianie udalenia pervogo postoiannogo moliara u detei na kharakter smeshchenia riadom raspolozhennykh zubov)

G. D. Frumkina. *Stomat.,Moscow* 36:50-54 March-April 1957

Dentists differ regarding the best time for the removal of unsavable first permanent molars. In the Stomatologic Polyclinic of Leningrad, a study was undertaken of the consequences of an early loss of the permanent first molar.

One hundred forty-nine children were selected and placed in three groups. In the first group of 46 children, aged eight to ten years, the permanent first molars were removed before the eruption of permanent bicuspids and second molars. The second group consisted of 47 children, nine to ten years old, in whom the first permanent molars were removed after the eruption of bicuspids but before the second molars were erupted. The third group of 56 children, aged 11 to 14, had the first permanent molars removed after the complete eruption of bicuspids and second molars.

One hundred and sixteen first permanent molars were extracted, impressions of plaster of paris and roentgenograms being taken preoperatively to determine the occlusion before the removal of teeth. Examinations were made at intervals of six to seven months over a period of four to five years with repeated impressions and roentgenograms. To observe the changes in the dental arch and in the adjacent teeth, measurements were taken: (1) from the distal surface of the second cuspids to the mesial surface of the second molars; (2) from the midline of the incisors to the distal surface of the second bicuspids, and (3) from the midline of the incisors to the point inside the cusps of the second molars. There were 759 roentgenograms, 4,000 measurements and 1,233 impressions made during the study.

The observations revealed that after the extraction of the first molar, the bicuspids moved distally to the degree depending on their contact points with opposing teeth, but did not change their position if the occlusion was normal. When the first permanent molar was extracted before or during the eruption of the second molar, the follicle of the second molar in most instances moved mesially more rapidly during the process of eruption. In the upper jaw, in comparison with the lower, the movement of second molars occurred more rapidly, but the bicuspids moved more slowly. In all instances the dental arch was about 0.8 to 0.9 mm. shorter on the side of removed tooth. At the same time the movement of the incisor midline toward the removed tooth was observed only in 44 per cent of the patients.

The extraction of the unsavable first permanent molar should be made in the period when the second molars are in process of eruption and the bicuspids have already erupted and occlude with their antagonists.

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Development of the masticatory apparatus in fetuses and newborn infants

(Entwicklungsbezügliche Feststellungen am Kaurorgan von Föten und Neugeborenen)

O. Hoffer. *Fortschr.Kieferorthop.* 17:165-175 Jan. 1957

Several authors (Friel, Brash, Northcroft, A. M. Schwarz, Clinch, and Taylor) have emphasized the value of breast or bottle feeding as a functional stimulus for normal development of the masticatory apparatus, especially of the palate and the lower jaw.

Serial examinations carried out at the Dental Clinic of the University of Milan, Italy, have resulted in findings which contradicted these assumptions.

1. Normal eruption of deciduous teeth in correct position was observed in the majority of in-

fants who had not been fed by breast or bottle and who, therefore, were without the functional stimulus which was claimed to be necessary for normal development of the masticatory apparatus.

2. In seven month old infants, fed artificially for at least three months, undisturbed development of all parts of the masticatory apparatus was observed.

3. The existence of a determinable relationship between the dimensions of the condyles and the form and size of the temporomandibular joint, assumed by several authors, was not ascertained. The different forms and sizes of the temporomandibular joint in fetuses and newborn infants accompanied by a similar development of the masticatory apparatus led to the following conclusion: In the initial period of the embryonal growth and development, no determinable relations exist between the dimensions of the condyles and the form, size and function of the temporomandibular joint.

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Ectopic eruption of the first permanent molar

Dorothy H. Young. *J.Den.Children* 24:153-162 Sept. 1957

Although ectopically erupting first permanent molars have been reported as early as 1923, very little is known of the peculiar behavior of these teeth. This study deals only with the first permanent molar.

The expression "ectopic eruption of the first permanent molar" implies that the permanent tooth is prevented from appearing in the oral cavity or is blocked from completely erupting by some portion of its mesial surface becoming locked under the distal contour of the second deciduous molar. This locked position may be only a temporary aberration. The locked first molar, after causing considerable destruction to the roots and crown of the adjacent tooth, may be released from its locked position and erupt normally. On the other hand, it may not release its hold, the resulting catastrophe being the early loss of the deciduous second molar, either mechanically or by abnormal exfoliation. In the first instance, teeth will be referred to as "jump" teeth, in the second instance as "hold" teeth.

Material for this study was collected from two sources. The patients in Group A were obtained from a private practice for children, those in Group B from the University of California School of Dentistry records. Patients were selected on the basis of the presence of the four second deciduous molars and the activity of the four permanent first molars discernible either roentgenographically or roentgenographically plus visual observation.

The study covered the years from 1942 to 1956. Of the 817 children in Group A, 386 were boys and 413 girls. Of the 802 children in Group B, 408 were boys and 394 girls. Among the 1,619 boys and girls, 52 patients exhibited 78 ectopic eruptions of the first permanent molar, of which 31 were hold teeth and 47 were jump teeth. This abnormality may occur either in the mandible or maxilla, unilaterally or bilaterally, or it may involve all four first permanent molars.

Ectopic eruptions were far more prevalent in the maxillary arch. The anomaly shows no difference as regards left or right sides. In Group A, 17 upper right molars, 23 upper left molars and 1 lower left molar were involved. In Group B, 16 upper right molars and 1 lower right molar, and 19 upper left molars and 1 lower left molar were involved.

The anomaly occurs more frequently in boys than in girls. There were 19 girls and 33 boys involved. In girls, there is considerable probability that the first permanent molar will jump, whereas in boys there is an equal chance that a hold or a jump will occur. Roentgenographic evidence indicated that the 19 girls had 5 hold and 20 jump teeth, and the 33 boys had 26 hold and 27 jump teeth.

One of every 31.1 youngsters possessed one or more ectopically erupting first permanent molars, but of these, only one of every 52.2 youngsters had one or more hold teeth. Sixty-six per cent of all ectopically erupting molars jump the hurdle and erupt normally.

The results of clinical and roentgenographic studies are assessed and seven cases are presented.

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Orthodontics

History of the American Board of Orthodontics

Oren A. Oliver. *Am.J.Orthodont.* 43:454-459 June 1957

The American Board of Orthodontics, the first dental board in the United States, was incorporated under the laws of the State of Illinois in 1930. The chief organizer was Albert H. Ketcham, a graduate of the Boston Dental College (1892) who was inspired by Edward H. Angle to specialize in orthodontics. Dr. Ketcham gained some of the ideas for the American Board of Orthodontics from physician friends who were members of the American Board of Ophthalmology (the first medical certifying board) and the American Board of Otolaryngology. Dr. Ketcham was the first president, and B. Frank Gray the first secretary.

The board early decided that it would certify, on application, those outstanding orthodontists whose professional record would equal or exceed the maximum examination that might be required by the board to establish a standard of fitness. At its second meeting, in April 1930, certificates were issued to 28 orthodontists. The board has continued its efforts to promote high standards of excellence in the practice of orthodontics. The board does not purport to confer on any person any legal qualification, privilege or license to practice orthodontics, nor does it intend to limit the activities of any licensed dentist. The purposes of the board have been stated as follows:

1. To stimulate and keep alive the spirit of research and self-improvement among students and practitioners of orthodontics.

2. To establish the competence of specialists to practice orthodontics.

3. To arrange, control and conduct examinations for the purpose of testing the qualifications of orthodontists and to confer certificates on those who meet the established requirements of the board.

In 1953 the board decided that it would no longer waive examination and certify candidates on their records. Examination of candidates for certificates may include any or all of the following: one or more theses on subjects satisfactory to the board; case reports; sets of casts fitted with appliances suitable for treatment; personal visits to offices of applicants; written or oral examinations; clinical presentations, and laboratory and technic examinations.

The board holds an annual meeting immediately preceding the annual convention of the American Association of Orthodontists. From 1930 through 1956 the board had issued 514 certificates of fitness. The value of the certificate issued by the board consists primarily of establishing in the mind of the holder the assurance that he is maintaining accredited standards of competency in his practice. The certificate also establishes standards of fitness to those anticipating specialization in orthodontics and stimulates the desire to obtain such a certificate as recognition of their ability.

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Changes in adult face height due to aging, wear and loss of teeth and prosthetic treatment: a roentgen cephalometric study mainly on Finnish women

Antje Tallgren. *Acta odont.scandinav.* 15, Supp.24:7-122, 1957

An investigation was undertaken of changes in the morphologic face height, the rest face height and the interocclusal clearance during the adult age period. The material comprised 302 subjects, mainly women, in the following study groups: (1) an adult, dentulous, normal group, to illustrate age changes during the period of from 20 to 80 years; (2) patients with abraded teeth, to illustrate the changes in the facial dimensions caused by abrasion of the dentition; (3) a group of denture wearers, to illustrate changes in face height after at least ten years' use of dentures, and (4) a group of denture wearers, to illustrate

changes in face height after extraction, after prosthetic treatment and during the first year of wearing dentures.

In normal individuals, both the morphologic face height and the rest face height showed an average increase from the age group 20 to 29 up to the oldest age group 50 to 81 years. No significant differences in the interocclusal clearance or the translation were found between the different age groups. The results indicate a continuous increase of both the morphologic face height and the rest face height during the adult period, the interocclusal clearance remaining, on the average, constant during this synchronous development.

The abrasion of the dentition appears to cause a pronounced reduction of the morphologic face height and a smaller reduction of the rest face height, resulting in an increase of the interocclusal clearance.

The long-term wearing of complete dentures causes pronounced changes in the facial dimensions, the reduction of the morphologic face height being accompanied to a considerable extent by a reduction also of the rest face height.

A longitudinal study of denture wearers showed pronounced changes in face height after tooth extraction, on the completion of the prosthetic treatment and during the first year of wearing dentures.

The rest face height after tooth extraction showed an average reduction of 1.4 mm. The restored morphologic face height was, on the average, 3.3 mm. larger than before extraction and corresponded to the pre-extraction rest face height. This pronounced increase occasioned a considerable increase of the rest face height as well.

As the increase caused by the prosthetic treatment was found to be greater in persons with low face height, a thorough study of the facial type is to be recommended when prosthetic treatment is undertaken and, if possible, a registration of the face height before extraction of the teeth.

After a half year of denture wear the morphologic face height showed a pronounced reduction, averaging 2 mm., accompanied by a corresponding reduction in the rest face height with dentures. Further reductions in the face height were observed during the next half year, although on a considerably smaller scale than during the preceding half year. The rest face height without dentures, on the other hand, underwent no pronounced changes during one year of denture wear. The pronounced reduction of the face height during the first half year of denture wear points to a "period of adaptation," followed by a stabilization during the second half year period.

The most important conclusion arising from this study is that the rest face height seems to adapt itself to changes in the morphologic face height. This prompts the question of the significance of the interocclusal clearance; it appears to be a space between the jaws conditioned by the functional requirements of the masticatory apparatus.

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Orthodontic treatment in the kindergartens of Krakow, Poland

(Wlasne spostrzezenia nad postepowaniem ortodontycznym w przedszkolach)

Zofie Brodkiewiczowa. *Czas.stomat.* 10:361-367 June 1957

Dentists who examine periodically the mouths of Krakow kindergarten pupils frequently find children whose teeth were already defective at the time of eruption. It can be assumed that some causative factors are at work during the intrauterine period which produce malformation and malocclusion.

The first step public health authorities have to undertake, if the nation's children are to have desirable health, is to ascertain that the parents are healthy. Alcoholic, syphilitic and tuberculous persons are not fit parents to procreate a healthy new generation.

The second and easier step is the inauguration of periodic medical and dental examinations of all children, beginning at the kindergarten level.

The public health authorities of Krakow and of the neighboring city, Nowa Huta, already have introduced in schools and kindergartens periodic dental examinations, caries-preventive measures and orthodontic treatments carried out by the staff of mobile dental units.

The problem "at what age should orthodontic treatment begin?" which is frequently discussed

in dental literature of many countries, was solved in Krakow with the only sensible answer, "as soon as possible." Waiting until the permanent dentition erupts, as advocated by many authors, appears unsound and erroneous.

Experience has shown that the earlier orthodontic treatment is instituted, the greater the influence of all corrective procedures will be on the growth and development of all parts of the dentofacial region.

In Krakow kindergartens, the children are trained in groups to practice oral hygiene and how to wear orthodontic appliances. This training is repeated individually at home after adequate instructions have been given to the parents.

Regular exercises of the oral muscles, applied properly and systematically, already have yielded favorable results. These exercises are followed by group instruction on proper mastication and respiration.

In all orthodontic procedures undertaken, emphasis is placed on child psychology to overcome the nervousness and apprehension children display during correction of anatomic abnormalities in the oral cavity. The psychic and emotional factors accompanying orthodontic treatment are not overlooked or underestimated.

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Serial extraction: procedures and limitations

B. F. Dewel. *Am.J.Orthodont.* 43:685-687 Sept. 1957

Increasing interest in serial extraction has caused apprehension on the part of its advocates who, from the beginning, have emphasized that the procedure is limited in application and is employed only for patients in whom a persistent deficiency in structural development can be demonstrated. As with any other method, and in spite of these warnings, serial extraction has its quota of overenthusiastic converts.

Serial extraction is based on the premise that in certain patients the orthodontist is confronted with a continuing discrepancy between total tooth material and available arch length. His responsibility is to recognize, in the early stages, structural deficiencies that have little or no hope of responding to standard treatment procedures or to prospective growth changes.

Serial extraction, however, is not a procedure to approach with abandon, for every patient with Class I malocclusion referred for examination at the age of seven or eight years is not a potential candidate for serial extraction. Many conditions may be partly self-corrective if the natural forces of development are permitted to operate without interference; others can be treated successfully with a complete complement of teeth.

The term "serial extraction" implies the removal of selected teeth in an orderly manner over a prolonged period of time. Preliminary interception and correction are accomplished in three separate stages, for three specific purposes:

1. Premature extraction of the deciduous cuspids provides the space for the incisors to assume normal positions in an even alignment directly over basal bone.

2. Subsequent extraction of the first deciduous molars permits the desirable early eruption of the first bicuspids.

3. The final extraction of the first bicuspids makes it possible for the cuspids to erupt in a favorable direction into the spaces formerly occupied by the first bicuspids. Occasionally, there are exceptions to this order, for each patient must be considered individually.

Serial extraction is a procedure requiring patience, preliminary supervision without mechanical therapy, and accurate timing in the extraction sequence. The well-spaced intervals between the various stages are designed to permit a new appraisal of the growth potential in each patient before the next series of extractions is undertaken. This means retaining the first bicuspids until the last possible moment. In this manner, the orthodontist still has the opportunity of returning to ideal treatment procedures if development unaccountably turns out to be favorable.

Even when serial extraction is indicated, the premature removal of teeth involves the danger of retarding future development in arches that already are deficient. Deciduous molars should be left undisturbed for as long as possible; they support the occlusion vertically as well as horizontally.

Properly conducted, serial extraction requires mechanical therapy for only a few months at the end of the period of supervision.

Premature enucleation of deeply embedded bicuspid tooth buds at an early age is to be condemned, as it can be achieved only by partial destruction of the buccal or lingual plates of alveolar bone. Equally serious is the fact that continuous exposure to the forces of mastication increases the resistance of the gingival tissues to penetration by the unerupted cuspids and second bicuspids. The prolonged absence of teeth in the bicuspid region also permits the tongue to flow into the remaining spaces between the first molars and lateral incisors.

Serial extraction must be approached cautiously and deliberately. The orthodontist must recognize its limitations and be judicious in its application.

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The stomatognathic system

J. A. Salzmann. *Alpha Omegan* 41:99-101 Sept. 1957

Orthodontics aims not only at establishing static, "normal" occlusion but at establishing, maintaining and restoring the dynamics of the stomatognathic system. The stomatognathic system includes the teeth, their supporting structures, the maxilla and the mandible, the musculature, the temporomandibular articulation, the tongue, the nerves and vascular supply, and other related structures.

Stomatognathics is the practice of dentistry which takes into consideration the interdependence of the teeth, jaw relationship, temporomandibular relation, craniofacial conformation and dental occlusion. The stability of orthodontically moved teeth and of artificial dentures depends on the consideration and integration of the gnathostatic factors and is not limited to occlusal arrangement alone.

Since 1930 many workers in the field of occlusion have recognized that it is not enough to establish static occlusion alone in relation to stomatognathic function. Static occlusion of the teeth in morphological and anatomic normal may not meet the demands of occlusion in functional dynamics.

Force, including that produced by orthodontic treatment, cannot change the morphology of the jaw bones, unless the applied force is strong enough to overcome the resultant force of functional stress which the bone is prepared to withstand. Orthodontic stresses applied to the teeth, acting as they do on the surrrounding alveolar bone through the periodontal fibers, modify tooth arrangement by changing the contour of the alveolar process only. They do not change the overall morphology of the respective bodies of the maxilla and mandible.

There is a basic relationship of the trajectories of the jaws and the basal arches to orthodontic therapy, especially their role in determining the need for extraction as an adjunctive orthodontic procedure.

The forces of mastication are to a certain extent structurally bound within the facial skeleton itself. Masticatory force is transmitted through the dentition from the mandible to the maxilla from whence it is distributed through the three main trajectorial systems, leading to the frontal, zygomaticotemporal and sphenocranial base regions. A closed functional system is formed which includes the mandible, the dental arches, the upper facial bones and the muscles of mastication.

The closed functional system begins with the dentition, goes through the trajectories of the maxilla to the base of the skull and to the muscular insertions from whence it goes back through the muscles of mastication to the base of the mandible and from there through the mandibular trajectories to complete the chain at the dentition. This closed functional arrangement limits the region in which the orthodontist can place the teeth in his attempts to eliminate malocclusion.

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Universities and dental education

H. F. Humphreys. *Brit.D.J.* 103:155-158
Sept. 3, 1957

Although all dental schools in the United Kingdom are now integral parts of universities, this is a recent development. None of those founded in the nineteenth century at inception was attached to a university. A century ago higher education for its own sake appeared to be the principal function of British universities, but this has since been largely overshadowed by the ever-rising edifice of professional schools.

In the leading universities in the United States the function of higher education still is considered paramount. Many full-time students working for a degree in any faculty have to take a two, three or four year general course in college (leading often to a first degree) before embarking on any professional training which is later taken in one of the graduate schools. This emphasis on higher education is becoming greater in contrast to the state of affairs in Great Britain.

There is no desire in this country to copy the American pattern. It is expensive and it unduly prolongs the period of pure instruction and postpones the date at which a young professional will be self-supporting. The objection is not only economic: the twenties are the years of original thought and expanding intelligence; if they are all spent in absorbing information with insufficient opportunity for thinking and acting, the educational result may be disappointing.

The essence of higher education is to fit one to lead a full life at a high level of thought, feeling and conduct.

The discipline of a dental student should teach him how to think, but disciplines which are predominantly scientific tend to produce a dogmatic outlook which sees life in terms of black and white, orthodox and heretical, and does not encourage tolerance or the growth of other faculties essential for a full life. Such faculties—a feeling for beauty, a sense of history and tradition, and the art of community living with its social obligations—will make him aware that there are important values quite different from the pragmatic sanctions of his own particular discipline.

To foster these faculties, a university can take several steps. It can discourage the increasing segregation of dental—and medical—students from others under different disciplines. It can promote tutorial systems like those of Oxford and Cambridge which ensure some personal contact of students with staff, of immature with mature minds, of young men and women in search of values with others who have found them. Thirdly, the university can make the curriculums of dental and medical students less crowded, so that these students have some leisure for thinking, and for cultivating tastes outside their own discipline. In the long run the status of a profession and its position in public esteem are greatly influenced by the educational standard of its members.

There are two contrasting views of dentistry as a profession and the type of training it requires. The first is that it is just a special branch of medicine and that those who practice it should have a medical qualification. The second is that held in America, that dentistry is a quite separate discipline whose connections with medicine are slight. Few of the older dental schools in America had any connection with medical schools; many were and some still are unattached to any university, and if they are they are almost invariably in a separate faculty from medicine. In spite of the intense jealousy shown by American dentists of control by medicine in any shape or form, they are far more tolerant than the dentists of this country to the employment of auxiliaries.

One consideration which may be adjudged to support the American preference for a sharp dichotomy between the two disciplines is this: If a dental school is just one department of a medical school, there will always be a tendency for it to suffer when the allocation of space, financial resources and other material considerations are being decided.

The most powerful argument against the sharp separation of dental from medical studies is the

stultifying effect it has on research. Vast sums of money have been spent in the United States during the last 30 years on dental research, but few concrete results of any real importance have emerged. Even the pathology of such a universal disease as dental caries is still imperfectly understood. Research is only likely to be fruitful if there is full collaboration between physicians and dentists; in practice, this is likely to occur only if they are working in the same group of buildings and have frequent social contacts. Collaboration of dentists with departments of the basic sciences is even more important. Not only should dental schools be part of university medical schools with free access to major departments of pure science, but dental hospitals should be closely linked with general teaching hospitals which have medical research as a major objective.

Church Farm, Hampston-in-Arden, Birmingham, England

Dental education and the dental manpower shortage

Gerald D. Timmons. *J.Canad.D.A.* 23:503-509 Sept. 1957

The main features of dental education in the United States and in Canada are similar. The Councils on Dental Education in the two countries co-operate closely. Accreditation of a school in one country automatically brings accreditation in the other country.

Canada, with 5,481 dentists, today has an overall dentist-population ratio of 1 to 2,934. The ratios in the various provinces range from 1:10,643 in Newfoundland to 1:2,353 in Ontario. Canada, like the United States, is experiencing a great increase in population. A sixth dental school in Canada will soon be opened at the University of Manitoba.

In the 1956–57 school year the five Canadian dental schools enrolled 785 students, of whom 206 were freshmen; approximately 185 students were graduated. There are just about as many students from the United States enrolled in Canadian dental schools as there are Canadian students enrolled in United States schools. In Canada, 66.49 per cent of the dental students come from two provinces. The Canadian ratio is one dental student to every 20,485 people; the ratio in the United States is one dental student to every 12,900 persons.

The Canadian schools have 57 nonresident students out of 785, a percentage of 7.26. By comparison, of the 13,004 dental students in the United States, only 141 are nonresident, a percentage of 1.08. Either Canada does not have a sufficient number of qualified students interested in studying dentistry, or it is being overly generous in educating persons for other lands.

The Council on Dental Education reports there are 2.7 applicants for each place in freshman classes in dental schools. The qualified student has no difficulty in gaining admission and the exceptional student can pick and choose, with the schools competing for him.

To solve the problem of recruitment of qualified students, the dental profession must begin to create, at the secondary school level, a desire to enter the profession. School counsels and university counselors must be educated to the opportunities in dentistry, so that they can guide youth. This will lead to more applications from qualified persons with a true motivation to study dentistry. The competition for brains is great, and the dental profession must enter that competition rather than to sit back smugly with the attitude that the dental profession is great and that the applicant permitted to enter the portals is being done a great favor.

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General

Joseph Fröhlich, court jester and dentist

(Hofnarr Fröhlich als Zahnarzt)

Carl Willnau. *Dent.Dienst* 9:4-5 June 1957

Joseph Fröhlich, court jester. Colored wax bust (about 1730)

Joseph Fröhlich (1694-1757), born as a peasant's son in Alt Aussee, Austria, was a successful and wealthy dental practitioner, who at times was attached to the ducal court of Saxonia in Dresden, to the royal court of Poland in Warsaw and to the imperial court of Austria in Vienna. He was noted not only for his knowledge of human anatomy and applied dentistry (which was recognized by Gerhard van Swieten, 1700-1772), his generous philanthropy and his splendid collection of works on medicine and dentistry, but far more for his success as the outstanding court jester of his time.

Fröhlich must have obtained a good classical, medical and dental education, because it was told that he ruined his health by devoting 16 hours a day to his extensive dental practice which seemingly was not hampered by his activities as a court jester and conjurer.

Genial, honest, unassuming and charitable, loving music and the arts, and caring far more for *Gemütlichkeit* than for fame, Fröhlich appeared to be a noble example of the substantial worth and charm of an old-fashioned Austrian.

Although Fröhlich obviously did introduce some new methods and remedies into the dental practice of his time, he was not known to have added a single new fact to dental science. In Saxonia, Poland and Austria, he is still remembered for his many sharp and witty sayings uttered as a court jester.

After having been associated with the imperial court of Austria for some time as court jester and dentist, Fröhlich attempted to practice dental medicine privately in Vienna. He was, however, investigated by the Austrian secret commissioners and compelled to leave the city within three days.

He settled in Dresden where he practiced dentistry, and he died there in 1757. Some of his belongings are still exhibited in Dresden; they consist mainly of an interesting scientific library, a traveling kit containing herbs and drugs used in his dental practice and a dental instrumentarium containing, in addition to pelicans, unique instruments which seem to indicate that Fröhlich was interested in the construction and insertion of artificial tooth restorations of some kind.

One of the most interesting objects exhibited is a leaflet which no doubt was distributed widely to visitors of the fair at Leipzig. In this leaflet, Fröhlich designated himself as the one and only "medicus dentalis" of His Majesty the Holy Emperor of Germany and Austria, and as a doctor who is skilled in the treatment of all diseases of body and soul, especially of teeth and eyes. The leaflet closes with a short poem in which he assures his patients that he is able to rejuvenate old people and to make smart men of simpletons. The leaflet is signed: "Joseph Fröh-

lich, Medicinae Doctorum, Specialist in Diseases of The Mouth"; and dated Leipzig, 1747.

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The dental profession and the National Health Service in Great Britain: review of nine years

(Neunjährige zahnärztliche Erfahrungen mit dem National Health Service in Grossbritannien)

H. G. Orlay and L. Castagnola.
Schweiz.Mschr.Zahnhk. 67:413-431 May 1957

After a group of British and foreign dentists had surveyed the experiences of the dental profession with the National Health Service in Great Britain during the last nine years, the following conclusions were reached:

1. If the National Health Service in Great Britain is to be continued to the benefit of the general public and the dental profession, several modifications and improvements must be introduced immediately.

2. The individual dentist must be free to practice dentistry without interference or objection by governmental agencies.

3. If accusations are made, the burden of proof must rest on the government, not, as at present, on the dentist.

4. Examiners of disputes between individual dentists and the National Health Service should be men of good standing in the dental profession, and not former dentists who have not practiced dentistry for many years. At present, these examiners are men who have been absent from dental practice for periods of from 10 to 20 years.

5. Decisions about fees for dental treatments should be made by a board consisting of representatives of the dental associations and laymen. This board and its decisions should be recognized by the National Health Service.

6. Additional fees for qualitatively superior work should be based on agreement between patient and dentist. The dentist should not be required to request special permission for such additional fees from governmental agencies.

7. A period of two years, during which young dentists should work as assistants to experienced dental practitioners after graduation from dental schools, should be made a condition for obtaining the degree.

8. Publications on National Health Service, distributed by the British Ministry of Health, should emphasize the value of conservative treatment, that is, preservation of natural teeth whenever possible, instead of promoting the destructive practice of indiscriminate tooth extractions.

9. The work of an average British dentist, under present conditions, is deprived of its interesting variety. Daily routine practice consists mainly of tooth extractions and construction of claspless dentures.

10. The average yearly work of a British dentist consists of the following: 1,500 fillings; 100 treatments of deciduous teeth, mainly with silver nitrate; between three and four inlays; between three and four crown or pivot crown constructions; between 200 and 250 partial or complete dentures; between four and six root canal treatments, and between 4,000 and 5,000 tooth extractions.

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Dentistry in Guy de Chauliac's "La Grande Chirurgie"

(Über Guy de Chauliac und sein Verhältnis zur Zahnheilkunde)

Hedvig Lidforss Strömgen. *Zahnärztl. Mitt.* 45:189-192 March 15, 1957

Guy de Chauliac (1300-1370) was the most distinguished European authority on anatomy and surgery of his time.

A country boy from Chauliac, a small village in the province of Auvergne, France, he received an excellent medical education at Toulouse, Montpellier and Paris, and he attended special courses on anatomy at Bologna, Italy.

In 1890, the French surgeon E. Nicaise reissued Guy de Chauliac's most important work, *La Grande Chirurgie,* in the original Old French language. This rare edition contains a complete bibliography of Guy's writing, printed and in manuscripts, and an excellent biography.

In this work, Guy gave an interesting summary of dentistry of the fourteenth century. He reported on oral surgical procedures and men-

tioned the use of narcotic and soporific inhalation, forerunners of anesthesia.

When Guy referred to dentistry and oral surgery as "particulares" (specialties), he gave recognition to the "dentator" (dentist) as a respectable practitioner. He added, however, "It appears to be safe to perform such operations under the direction of a medical man." His recommendation that a physician—and not a surgeon—should attend dental operations in supervisory capacity could be regarded as an unfavorable reflection on the quality of services rendered by dentators. At that time, however, operations performed by surgeons were frequently directed by physicians, and, therefore, probably no disparagement of the abilities of dentators was intended by Guy de Chauliac.

Several chapters of *La Grande Chirurgie* were devoted to dentistry, such as those on anatomy of the teeth, diseases of the teeth, toothache, loose and missing teeth, and cavities in tooth structures.

He made a clear distinction between dentators and "arracheurs des dents" (tooth pullers).

He listed instruments used in dental practice of his time, and mentioned small, straight knives with convex edges; several types of files, spatulas, squirts, tooth drawers, and "tartières." No other translation of this Old French term is available than "drill," which instrument was not mentioned in medical literature prior to Guy de Chauliac.

For tooth extraction, he recommended the use of "pelicans." These instruments were employed in dental practice until the beginning of the nineteenth century, and were mentioned by Laforgue in *Théorie et Pratique de l'Art du Dentiste,* published in 1810.

In anatomy of the teeth and treatment of tooth diseases, Guy de Chauliac followed the maxims of his "maître" Galen (130-200 A.D.).

He stated, however, that teeth are genuine bones and have no nerves. His denial of the existence of nerves in teeth may be a misunderstanding. He, and many other medical writers of that time, regarded the tooth as consisting only of the hard substances, enamel and dentin, and did not consider the pulp and roots as parts of the tooth. It can be assumed that Guy never had the opportunity to observe an exposed pulp.

In his description of treatment methods, used in dental practice, he again appeared to be a true pupil of Galen. He recommended bloodletting, administration of laxatives and prescription of special diets.

He also mentioned the value of preserving teeth by filling cavities with the aid of a special instrument he called "esbuschailler." No French dictionary lists this or a related term. It can be assumed that it was derived from "bucella," meaning something like "excavation," therefore, probably for "cavity preparation."

As one of the most important goals of dentistry, Guy de Chauliac named "the improvement of the appearance of the face."

Lundgade 5, Copenhagen, Denmark

Time and motion study in dentistry : part I

David A. Hoffman. *Bul.Greater Milwaukee D.A.* 23:101-102, 107 July 1957

For the past three years the author and associates have been working on time and motion study principles in dentistry. To evaluate time the random sampling technic is used; to evaluate motion, "memo-motion photography," by which a film is operated at one frame per second instead of the normal 16 frames, is used.

Data from two practices showed that Dr. A had a productive dental time of 41 per cent compared with Dr. D who produced more than five times the service rendered by Dr. A. Dr. D worked fewer hours with less fatigue than Dr. A. Dr. A, by applying the results of analysis and study, was able to increase his productive dental service, and to work fewer hours more comfortably without increasing fees, with a greater dental income.

A well-organized and well-operated general dental practice should have a productive time of about 70 per cent, of which about 34 per cent should be restorative dentistry, 14 per cent prosthetic dentistry, 10 per cent examination, diagnosis and patient education, 4 per cent oral surgery and 8 per cent miscellaneous. Periodontal service should take a larger percentage of time in the dental office. Dental prophylaxis service is classified as nonproductive delegatable service because the trained dental hygienist renders this

service. It requires a great deal of education and experience to become a dentist, and the dentist's ability should be put to the maximum use for the benefit of humanity; he must render only those dental services that cannot be delegated to auxiliary personnel.

Memomotion photography analysis provides a method whereby office equipment design and operatory layout can be more efficiently organized and utilized. Simplicity and mobility are important factors.

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Sterilizing of sharp instruments using a boiling emulsion of AC-10 oil

Henry A. Thompson. *J.Canad.D.A.* 23:265-275 May 1957

Corrosion of sharp instruments as a result of sterilizing procedures is a harassing problem to the surgeon. Experiments were undertaken to assess the comparative sterilizing efficiency and the effect on the cutting edges of detachable scalpel blades, using boiling water, boiling solution of sodium carbonate 2 per cent, and boiling emulsion of AC-10 oil 2 per cent in sodium carbonate 2 per cent solution.

AC-10 oil was developed by Le May (1945) to be used in conjunction with sodium carbonate solution to prevent corrosion in the sterilizing process. It is described as "95 per cent of a light petroleum neutral oil, and 5 per cent of a complex of sodium salts of petroleum sulphonic acids as the inhibitor."

The blades tested were Gillette shape D.

Bacteriological tests were conducted with blades individually placed in numbered test tubes with cotton plugs and sterilized in an autoclave for 30 minutes. The blades were removed, placed in contaminating emulsions and boiled in the three test media. The following results were observed:

Boiling water is an efficient method of sterilizing. It cannot be relied on to destroy spores in five minutes, and it corrodes carbon steel.

Sodium carbonate appears to improve the sterilizing ability of boiling water. It does produce some corrosion and leaves a deposit which detracts from the efficiency of the edge. This deposit makes the instrument sticky to handle.

AC-10 emulsion provides, if anything, improved sterilizing efficiency, and it satisfactorily maintains the integrity of the blade. There is an oil deposit on the surface of the instrument which may be objectionable if not removed with sterile gauze.

A series of experiments was then set up to test for corrosion effects of the three sterilizing methods, with the following results:

Water sterilization produced excessive corrosion so that the blades were unsuitable for surgical use.

Sodium carbonate 2 per cent solution, although appearing to reduce the corrosion somewhat, did cause a deposit. Four of five blades were unsuitable for use.

AC-10 emulsion did not produce any perceptible damage to the blades, except for slight changes seen under magnification.

86 Bloor Street, West, Toronto, Ontario, Canada

A new hand disinfectant for use in surgical and dental practice

(Beitrag zur chirurgischen und zahnärztlichen Händedesinfektion)

J. Keudel. *Deut.med.Wschr.* 82:1169-1170 July 12, 1957

Many dentists and surgeons have experienced sensitive skin reactions to the continued use of soap for hand disinfection. In many clinics, hospitals, medical and dental offices, soap has been replaced with different brands of hand disinfectants (detergents).

At the Dental Clinic and the Surgical Clinic of the University of Frankfurt/Main, Germany, the recently introduced hand disinfectant, "Riseptin" (dodecyl dimethyl 3,4-dichlorobenzylammonium chloride) has been used routinely for preoperative and postoperative hand disinfections for the last 12 months.

After more than 120,000 hand washings with a 1 per cent solution of the disinfectant, bacteriologic tests of random samples taken from the inside of surgical rubber gloves after use showed sterility in 97.11 per cent.

This result, obtained after scrubbings for seven minutes before the operation and scrubbings for five minutes between successive dental or surgical procedures, has not been equaled by any other brand of disinfectant or by any kind of soap previously used.

Scrubbing for two minutes with this solution is at least equivalent to the customary ten minute surgical scrub.

Ludwig Rehn Strasse 14, Frankfurt/Main; Germany

Dental Council of India: president's address

R. Ahmed. *J.All India D.A.* 29:87-91 April 1957

The Dental Council of India was established in 1949 and is financed by the government plus small contributions received from the state dental councils. The Dental Council is composed of two representatives from each state—one elected and one nominated; four representatives of the dental institutions; one each from the universities granting recognized dental qualifications; one representative from the Medical Council of India, and the director-general of health service. At present the Council has 30 members from all over India. Capt. S. Bratt, a dental surgeon, is secretary. Headquarters are in Jindal House, Asaf Ali Road, New Delhi.

The Dental Council received help and guidance from the Medical Council of India, and, until 1956, adopted the rules and regulations of the Medical Council, but since 1956 has had its own rules.

The regulations and syllabuses for courses leading to the B.D.S. degree have been approved by the Council and the government, and there is now uniformity of training in dental institutions. In 1949 only three dental colleges existed. Now India has seven dental colleges, all affiliated to universities subscribing to the B.D.S. course laid down by the Council: two colleges in Bombay and one each at Calcutta, Lucknow, Madras, Amritsar and Patiala. The Council has recommended an M.D.S. course for higher training mainly for dental teachers, and the government has approved the recommendation.

The Council and government have approved syllabuses and regulations for courses for dental hygienists and technicians. The Sir C.E.M. Dental College, Bombay, has started a course for technicians. The Armed Forces Medical College, Poona, started a course for dental hygienists, but since the college's board of examiners was not approved by the Council, the course remains unrecognized.

Under the Council's advice the government is sponsoring dental fellowships abroad for teachers. The Council has recommended that the government open new dental colleges, expand some of the present colleges, and open dental clinics at the 250 district hospitals.

The Dental Council maintains a library of the latest technical and reference books. On a recommendation of the Council, a dental research advisory committee under the Indian Council of Medical Research has been created. Col. N. N. Bery is a committee chairman; heads of the dental colleges serve as members. R. V. Bradlaw, dental health consultant of WHO, spent seven weeks in India and visited all the dental institutions. Carl L. Sebelius, WHO dental officer, is now in India conducting a study on the epidemiology of periodontal diseases, in collaboration with the dental research advisory committee.

Minister for Agriculture and Animal Husbandry, West Bengal, India.

Halitosis

Maynard K. Hine. *J.A.D.A.* 55:37-46 July 1957

The human breath normally is free of offensive odors, and has a slightly sweetish, characteristically human odor. Slightly unpleasant odors can be detected in most adults, and in a high percentage of instances the breath has a definitely unpleasant quality.

Halitosis is important for at least three reasons:

1. Man is forced to live in close contact with others, so that anything about him which is unpleasant may interfere with his acceptance by those about him. It is particularly important that dentists have an unoffensive breath, since the nature of their profession requires that they work in close proximity with others.

2. The recognition that halitosis is common, and that it is unpleasant to a person's associates, has caused many persons to worry about its presence, or the possibility of its presence. Some persons often talk with their faces averted, or with their hands before their mouths, fearing that halitosis may be present. Others chew gum or mints, or use a flavored mouth rinse frequently, because they fear their breath may be offensive and wish to mask the odor. Such fears can reduce a person's confidence in approaching others, and can interfere with his effectiveness in any activity.

3. The presence of halitosis is usually an indication that some abnormal condition exists which should be located and corrected.

Breath odors vary from hour to hour, day to day, and according to age. In the young child the breath normally has a rather sweet, pleasing odor; as the person grows older, the breath odors gradually become more definite but not, normally, too unpleasant. The average adult breath is described as "heavy," "pungent," "somewhat sour," and so forth. The change in normal breath may be due to epithelial and food debris, salivary stagnation, periodontal disease, and perhaps to metabolic changes in the individual.

Most oral diseases produce conditions which are odorous and hence can contribute to halitosis. It is important for the dentist to correct these conditions when they are present. One of the results of correct dental therapy will be an improvement in the quality of the breath of the patient.

Ninety per cent of all odors on the breath originate from local oral conditions, usually decaying food debris, stagnating saliva, minor gingival hemorrhages, and so forth. Treatment for halitosis therefore includes correction of existing oral disorders. A thorough prophylaxis should be given, followed by elimination of food impactions, periodontal disease, carious lesions, putrescent pulps, and unclean dentures. Mouth breathing should be avoided. Reduction of intake of fatty substances, particularly milk and butter fats, may be of value; a balanced diet is to be preferred in most instances, anyway, so it should be recommended. Smoking, and drinking of highly flavored beverages, should be reduced. Eating of highly spiced foods, flavored with onion or garlic, should be avoided as much as possible.

Careful toothbrushing will also reduce mouth odors in most instances, and often a flavored mouth rinse will help somewhat.

Some instances of halitosis will require searching by a competent physician for systemic causes. Obviously, correction of the pathologic process causing the odor is necessary to improve the halitosis.

Those who work close to others should train themselves to refrain from breathing directly on their associates. Dentists should discuss problems associated with halitosis freely with their patients, and dentists themselves should insist that they be kept informed about the status of their breath.

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Philosophy of dentistry
(Philosophie der Zahnheilkunde)

E. S. Priester. *Zahnärztl.Rundschau* 66:319-322 Aug. 5, 1957

It has often been stated that dentists as a rule are not well-informed on subjects not directly connected with their profession, that they are extremely narrow in their outside interests and that they are poor readers. The concentration of purely professional matters seems to have crowded out all other intellectual activities.

In the United States, John E. Gurley asserted that as long as the idea of entirely mechanical dentistry had predominated, the application of philosophic thought was not required. Today, however, dentistry plays an important role in maintaining and safeguarding the public health in all countries, and, therefore, dentists should try to understand the meaning and value of life. When dental education will be able to develop more thinkers, the dental profession, as a social group, will fulfill its obligation to the general public. Only dentists who have come to an understanding of the meaning of the expression "an abundant life," will be able themselves to experience such a life.

In 1944, the College of Dentistry of New York University introduced courses on the philosophy of dentistry. Matthew H. Willing delivered lec-

tures on the following subjects: (1) significance of philosophy; (2) basic sciences; (3) dental problems in an ever-changing society; (4) relations between dentistry and medicine; (5) higher dental education; (6) dentistry and public health; (7) economic, ethical and social problems; (8) prevention of diseases; (9) legislative proposals and (10) prognosis of future developments in dentistry.

In 1948, the dean of the School of Dentistry of the University of Michigan, Russell W. Bunting, stated in a lecture on philosophy of dentistry that only in the proper application of philosophic ideas to dental science lies the justification for considering dentistry a profession and not a trade. He concluded this lecture by emphasizing that dental practitioners and students must give the same—if not a greater—attention to philosophic, theoretical and speculative thoughts than to mechanical procedures; they should strive hard not only to master the details of operative and prosthetic dentistry in practice and laboratory but should never lose sight of the significance of philosophy in dentistry.

In 1950, under the sponsorship of the Massachusetts Dental Society, Daniel J. Holland held a symposium on dental education, legislation and philosophy in which outstanding educators and scientists participated.

This is a brief enumeration of the contributions of the United States to the philosophy of dentistry. What did the dental profession or the dental colleges of Europe contribute? There is only one answer to this question: nothing.

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Classification of dental literature (according to the decimal system)
(Clasificación de la literatura odontólogica (según el sistema decimal))

R. Marcucci C. *Rev.Fed.odont.Colombiana* 7:473-476 Jan.-Feb. 1957

A classification of dental literature according to the Dewey decimal classification is presented. Dewey's original system for the classification of literature of all universal knowledge is the only system accepted internationally. The entire field of matter of international knowledge is divided into ten main classes which are marked from 0 to 9. Every class is divided into ten divisions and every division into ten sections making a total figure of 1,000 divisions for the whole field. Each matter of universal knowledge is represented by a group of three figures which indicate class, division and section. These correspond, respectively, to the first, second and third columns in the group. Subdivision of sections into subsections and further subdivisions is obtained by placing a decimal point after every column and forming new columns and groups after the decimal point.

Dewey's system has not been used enough for the classification of dental literature which continues to grow. Black presented a classification for dental literature based on Dewey's system. He used both letters and figures, which fact complicated the classification.

In Dewey's original system dentistry bears the decimal figure of 617.6 which is formed from "class figure" 6 as representative of applied science, "division figure" 61 as representative of medicine, "section figure" 617 as representative of surgery and traumatology and "subsection figure" 617.6 as representative of dentistry. The classification of dental literature presented in this article starts with a new column of division of subsections in the group 617.6 of dentistry. After addition of the column with figures from 0 to 9, the classification for dental literature reads as follows: 617.60 general subjects; 617.61 dental anatomy, histology and physiology; 617.62 dental surgery; 617.63 dental prostheses; 617.64 orthodontics; 617.65 oral hygiene; 617.66 dental pathology; 617.67 oral surgery; 617.68 dental jurisprudence, dental ethics and dental economics. Figure 617.69 does not as yet appear in the classification and will probably be used in the future.

The classification consists of two parts: one with tables of dental matter and dental subjects with various subdivisions and the other with an alphabetic index for immediate reference to the proper number of classification for each dental matter and dental subject.

The classification is especially useful to the libraries of dental schools.

Biblioteca de la Facultad de Odontología, Universidad Nacional de Colombia, Bogotá, Colombia

Halitosis

Brit.M.J. No. 5045:654 Sept. 14, 1957

Q.—What are the most likely causes of halitosis, and what treatment is recommended?

A.—The almost invariable cause of halitosis is some infection in the mouth or respiratory tract. Such diseases as bronchiectasis and long abscess may cause it, and the teeth should be carefully scrutinized by a dentist and any gingivitis or cavity treated. In many patients chronic infection of the tonsils is responsible, and this can often be convincingly demonstrated by rubbing the tonsil with the finger, which will then yield olfactory proof of the origin of the fetor. Chronic nasal disease, such as atrophic rhinitis or sinusitis, is another possible cause, and these conditions should be excluded.

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Specialties in dentistry with special reference to oral surgery

Leslie M. FitzGerald. *J.A.D.A.* 55:545-549 Oct. 1957

Many persons look askance at the increasing tendency toward specialization in the health professions. The patient grows more and more unhappy as he is shuttled among specialists without getting a good picture of what is wrong with him or a notion of how to set it right. Yet, specialties are a part of modern dental and medical practice and are here to stay.

In medicine the specialties developed earlier than in dentistry. The first medical specialty board, the American Board of Ophthalmology, was founded in 1917, and three more medical boards were developed by 1933.

The first dental specialty board, the American Board of Oral Surgery, was formed in 1945 by the American Society of Oral Surgeons. This board immediately petitioned the House of Delegates of the American Dental Association to direct the Council on Dental Education to develop general standards and requirements through which recognized specialty boards could be established in the dental profession. The resolution was approved, and the American Board of Oral Surgery was established in 1946 as the first recognized specialty board in dentistry.

As of December 1, 1956, there were 1,436 diplomates of the seven recognized boards, distributed as follows: American Board of Dental Public Health, 29; American Board of Oral Pathology, 37; American Board of Oral Surgery, 358; American Board of Orthodontics, 531; American Board of Pedodontics, 63; American Board of Periodontics, 227, and American Board of Prosthodontics, 191.

Applicants for the American Board of Oral Surgery must pass written and oral examinations.

The board established minimal standards for graduate training, effective October 1, 1952. Formal advanced training in oral surgery for three years in a recognized graduate school or hospital approved by the Association's Council on Dental Education is a basic requirement. The applicant will be required to have devoted at least five years exclusively to the practice of oral surgery. The time spent in graduate training may be included.

Specialty boards must not lose their voluntary status. Specialty boards are not education agencies. They have not been established to usurp the function of the dental school, but to assist in the improvement of dental health services. The specialties have no existence apart from the profession which fosters them. The establishment of the specialty boards has had a strong influence on the development of graduate programs and the establishment of internships and residencies. In 1948, 20 hospitals had established internship or residency programs in oral surgery. Today there are 70 approved straight internships in oral surgery and 82 residencies in oral surgery. In the 1949-50 school year, 13 dental schools offered graduate programs in oral surgery; in the 1956-57 school year, there were 24 graduate programs in oral surgery.

Today graduate programs are offered by 73 per cent of the dental schools, such programs ranging in length from nine months to five years.

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Doctoral and Masters' dissertations

In this column each month are listed recent Doctoral and Masters' dissertations of dental interest, accepted by the dental schools or graduate schools in partial fulfillment for advanced degrees. Copies of many of these theses are available from the schools through interlibrary loan.

Denture base materials—nylon (Materiales de base—nylon). *Oscar Kogan. 1956.* CIR.DENT. *University of Buenos Aires, Argentina.*

Different types of shoulder preparation (Distintos tipos de preparación del hombro). *Jorge Belleville. 1957.* CIR.DENT. *University of Buenos Aires, Argentina.*

Nutrition and the oral cavity (Nutrición y cavidad oral). *Rosa Iusem de Carvel. 1957.* CIR.DENT. *University of Buenos Aires, Argentina.*

Hypodontia in the permanent dentition. *Hans Grahnen. 1957.* ODONT.D. *Royal Dental School, Malmö, Sweden.*

Quantitative roentgenologic studies on changes in mineral content of bone *in vivo. Karl-Ake Omnell. 1957.* ODONT.D. *Royal Dental School, Malmö, Sweden.*

Secondary effects of local anesthetics (Nebenerscheinungen bei den Lokalanästhetika). *Karl Heinz Brinkmann. 1956.* DR.MED.DENT. *Medical Academy of Düsseldorf, Germany.*

Causes and treatment of xerostomia (Über die Ursachen der Mundtrockenheit und ihre Therapie). *Herbert Brodowski. 1956.* DR.MED.DENT. *Medical Academy of Düsseldorf, Germany.*

Condition of the dentition, especially the frequency of dental caries, in preschool and school children of the district of Döbeln (Der Zustand des Gebisses, insbesondere karies, der vorschulischen und schulpflichtigen Kinder im Kreis Döbeln). *Joachim Mähler. 1956.* DR.MED.DENT. *Medical Academy of Düsseldorf, Germany.*

Effects of various antibiotics in oral surgical procedures (Inwieweit können Antibiotica das chirurgische Vorgehen beeinflussen?). *Karl Zitzmann. 1956.* DR.MED.DENT. *Medical Academy of Düsseldorf, Germany.*

Clinical treatment of anachoretic pulpitis (Zur Klinik der Pulpitis chronica clausa). *Philippe Cherix. 1957.* DR.MED.DENT. *Medical Academy of Düsseldorf, Germany.*

Roentgenographic re-examinations of upper anterior teeth and the tuber region in macerated skulls (Röntgenologische Nachuntersuchungen der oberen Frontzähne und der Tuber-Region an mazerierten Schädeln). *Hans Peter Herwig. 1956.* DR.MED.DENT. *Free University of Berlin, Germany.*

Measurements of the resilience of the mucous membrane of lower jaws beneath free-end dentures, carried out on models (Messungen der Resilienz der Unterkieferschleimhaut unter Freiend-Prothesen, ausgeführt an Modellen). *Wolfgang Kettler. 1956.* DR.MED.DENT. *Free University of Berlin, Germany.*

Do sex factors influence the changing dentition? (Gibt es im Zahnwechsel Unterschiede zwischen den Geschlechtern?) *Eva Quade-Schwarz. 1956.* DR.MED.DENT. *Free University of Berlin, Germany.*

Possibility of preserving deciduous teeth with diseased or nonvital pulps (Über die Erhaltungsmöglichkeit pulpakranker oder devitaler Milchzähne). *Ernesto Anderegg. 1956.* DR.MED.DENT. *University of Bonn, Germany.*

Utilization of fluorides in preventive dentistry and the dental industry: reduction of caries frequency (Zur Verwendung von Fluoriden in der verhütenden Medizin und Dental-Industrie: Verminderung der Karies-Häufigkeit). *Georg Fischer. 1956.* DR.MED.DENT. *University of Bonn, Germany.*

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INDEX AVAILABLE

The index to volume 2 of DENTAL ABSTRACTS, covering the twelve issues published in 1957, is now available. The index includes a list of the periodicals from which articles are abstracted, with addresses. Copies may be obtained free of charge from the Subscription Department at the Central Office, 222 East Superior Street, Chicago 11, Illinois.